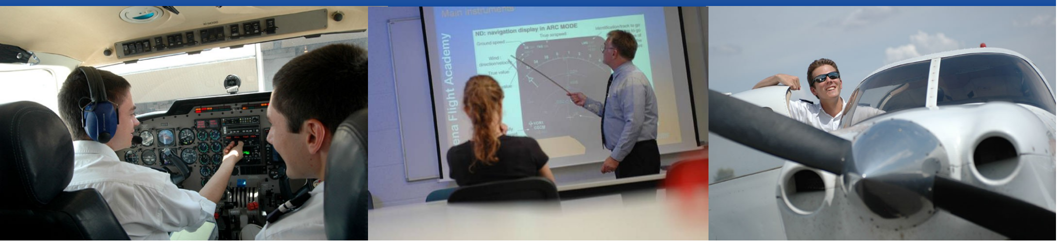


DA40-180

D I A M O N D S T A R

QUICK REFERENCE HANDBOOK

Revision 1.3

EFF: 08-13-2010

Document Level: 3

sabena
AIRLINE TRAINING CENTER, INC.

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WARNING!
This QRH is to be used for training purposes only within SATC/SFA. In case there is a discrepancy between the AFM/POH or this QRH, the AFM/POH will overrule the procedures, limitations, performance or systems described in this POH.

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PITCH POWER TABLE

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SPEED	CONF	ALT/PHASE	MAP / RPM	BODY ATTITUDE (°)
TAKEOFF				
VR 60 KIAS	FLAPS T.O.	ROTATION	FULL / MAX	+9
CLIMB				
70 KIAS	CLEAN	> 300 AGL	FULL / 2400	+10
75 KIAS	CLEAN	> 1.000 AGL	FULL / 2400	+8
LEVEL				
65 KIAS	CLEAN	SLOW FLIGHT	17 / MAX	+7
100 KIAS	CLEAN		19 / 2400	+2
105 KIAS	CLEAN		20 / 2400	+1
110 KIAS	CLEAN		21 / 2400	0
120 KIAS	CLEAN		24 / 2400	-1
DESCENT 500FPM				
120 KIAS	CLEAN		17 / 2400	-2
110 KIAS	CLEAN		15 / 2400	-2
90 KIAS	FLAPS T/O	INSTR APCH	14 / MAX	-5
NORMAL TRAFFIC PATTERN				
100 KIAS	CLEAN	DOWNWIND	19 / 2400	+2
90 KIAS	FLAPS T/O	DOWNWIND	19 / 2400	- 1
80 KIAS	FLAPS T/O	BASELEG	15 / 2400	-3
70 KIAS	FLAPS LDG	FINAL	19 / MAX	AIMING POINT

SPEED	CONF	ALT/PHASE	MAP / RPM	BODY ATTITUDE (°)
FLAPLESS PATTERN				
100 KIAS	CLEAN	DOWNWIND	18 / 2400	+2
90 KIAS	CLEAN	DOWNWIND	18 / 2400	+2
85 KIAS	CLEAN	BASELEG	13 / 2400	-1
75 KIAS	CLEAN	FINAL	14 / MAX	AIMING POINT

MANEUVERS

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SPEEDS		
NORMAL CLIMB	70 KIAS	< 1.000 FT AGL
NORMAL CLIMB	75 KIAS	> 1.000 FT AGL
BEST RATE OF CLIMB (FLAPS T/O)	60 KIAS @ 2,205 LBS	66 KIAS @ 2,535 LBS
TO EXPEDITE CLIMB	70 KIAS	FULL POWER / MAX RPM
NORMAL CRUISE	110 KIAS	< 5 .000 FT MSL
NORMAL CRUISE	120 KTAS	> 5.000 FT MSL
VFR MANEUVERS	100 KIAS	
MAX SPEED LIGHT TURBULENCE	129 KIAS (Vno)	
MAX SPEED ROUGH AIR	108 KIAS > 2,161 LBS (Va)	94 KIAS < 2,161 LBS (Va)
TO EXPEDITE DESCENT	AS REQUIRED	1.000 FPM

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SPEEDS		
IFR HOLDING	100 KIAS	CLEAN
IFR COURSE REVERSAL	100 KIAS	CLEAN
IFR APPROACH SPEED	90 KIAS	FLAPS T/O

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SLOW FLIGHT

- DECELERATION

SPEED .... 100 KIAS
POWER .... REDUCE TO 12" MAP / MAX RPM
ALTITUDE .... MAINTAIN
BA .... GRADUALLY INCREASE TO + 7°
SPEED .... 65 KIAS
POWER .... 17" MAP
Trim

- ACCELERATION

POWER .... FULL POWER / MAX RPM
ALTITUDE .... MAINTAIN
BA .... GRADUALLY DECREASE TO +2°
SPEED .... 100 KIAS
POWER .... 19" / 2400 RPM
Trim

STEEP TURNS

SPEED .... 100 KIAS
BANK ANGLE .... NORMAL ROLL RATE TO 45°
BA .... INCREASE TO 2.5°
POWER .... INCREASE 2"
RUDDER .... AS REQUIRED TO CENTER SIDE SLIP
Do not trim
HEADING .... 15 ° BEFORE INITIAL HEADING
BANK .... NORMAL ROLL RATE TO 0°
BA .... DECREASE TO +2°
POWER .... 19" / 2400 RPM
Control the roll to repeat exercise in opposite direction.
RUDDER .... AS REQUIRED TO CENTER SIDE SLIP

STALLS

- BEFORE (EACH) STALL EXERCISE—VITAL ACTIONS

H HEIGHT .... ABOVE 2,300 FT AGL
A AREA .... OUT OF CONTROLLED AIRSPACE
.... NOT ABOVE TOWNS OR AIRFIELDS
C COCKPIT .... NO LARGE LOOSE ARTICLES
.... SEATS AND SEAT BELTS SECURES
.... ENGINE INSTRUMENTS IN LIMITS
L LOOKOUT .... 180° OR 2x90° CLEARING TURN(S)

STANDARD RECOVERY TECHNIQUE

VALID FOR ALL STALL EXERCISES

- AS THE NOSE STARTS TO DROP

1—**BODY ATTITUDE** .... SLIGHTLY BELOW THE HORIZON
2—**POWER** .... FULL

- IF A WING SHOULD DROP

RUDDER .... OPPOSITE TO PREVENT YAW
SPEED .... CHECK > 65 KIAS
AILERONS .... USE TO LEVEL THE WINGS

- WHEN FLYING SPEED HAS BEEN REGAINED

3—**RECOVERY** .... SEE BELOW ACCORDING TO THE TYPE OF STALL

STALL (CLEAN)

0° BANK—52 KIAS

IDLE—FORWARD CG—MAX WEIGHT

- ENTRY
  - SPEED .... 100 KIAS
  - POWER .... REDUCE TO IDLE / MAX RPM
  - ALTITUDE .... MAINTAIN
  - TRIM .... DO NOT TRIM BELOW 65 KIAS
- RECOVERY
  - POWER .... FULL
  - SPEED .... ACCELERATING THROUGH 65 KIAS
  - BA .... ROTATE TO +9°
  - SPEED .... MAINTAIN 75 KIAS
  - ALTITUDE .... CLIMB TO INITIAL ALTITUDE
  - HEADING .... TURN BACK TO INITIAL HEADING

LEVEL OFF AT INITIAL ALTITUDE

BA .... GRADUALLY DECREASE TO +2°
SPEED .... 100 KIAS
POWER .... 19” / 2400 RPM

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TOC PPT MAN NORM EMER PAT LIM W&B PERF

TAKEOFF STALL (POWER—ON / CLEAN)

NO AFM DATA ON EXACT STALL SPEED AVAILABLE

EXPECT ACTUAL STALL SPEED TO BE BELOW 50 KIAS (0° BANK)

- ENTRY
  - SPEED .... 100 KIAS
  - POWER .... 19” / 2400 RPM
  - POWER .... 12” / MAX RPM
  - WHEN PASSING THROUGH 70 KIAS:
  - BA .... RAISE TO +20°
  - POWER .... FULL POWER or 17” / MAX RPM (UP TO INSTRUCTOR)
  - TRIM .... DO NOT TRIM BELOW 65 KIAS
- RECOVERY
  - POWER .... FULL
  - SPEED .... ACCELERATING THROUGH 65 KIAS
  - BA .... ROTATE TO +9°
  - SPEED .... MAINTAIN 75 KIAS
  - ALTITUDE .... BACK TO INITIAL ALTITUDE
  - HEADING .... TURN BACK TO INITIAL HEADING

LEVEL OFF AT INITIAL ALTITUDE

SPEED .... 100 KIAS
POWER .... 19” / 2400 RPM

Trim

LANDING STALL (POWER—OFF / FLAPS LDG)

0° BANK—49 KIAS

IDLE—FORWARD CG—MAX WEIGHT

- ENTRY

SPEED .... 100 KIAS
POWER .... 19" / 2400 RPM

USE TRAFFIC PATTERN SEQUENCE TO ARRIVE AT FINAL CONFIGURATION (LDG FLAPS—75KIAS)

POWER .... 14" / 2400 RPM
SPEED .... 75 KIAS
FLIGHT PATH .... ESTABLISH A STABILIZED DESCENT
TRIM .... TRIM FOR 75 KIAS
POWER .... IDLE & SIMULATE A FLARE TO LAND

- RECOVERY

POWER .... FULL / MAX RPM
FLAPS .... TAKEOFF
SPEED .... 65 KIAS
BA .... ROTATE TO +9°
ALTIMETER & VSI .... POSITIVE CLIMB

"POSITIVE CLIMB"

SPEED .... > 70 KIAS
FLAPS .... UP
SPEED .... MAINTAIN 75 KIAS
ALTITUDE .... CLIMB TO INITIAL ALTITUDE
HEADING .... TURN BACK TO INITIAL HEADING

LEVEL OFF AT INITIAL ALTITUDE

BA .... GRADUALLY DECREASE TO +2°
SPEED .... 100 KIAS
POWER .... 19" / 2400 RPM

Trim

SPIN RECOVERY

Spins are <u>NOT</u> allowed on the DA40 as per AFM/POH.

APPROVED MANEUVERS

a) Normal Category:

CAUTION

Aerobatics, spinning, and flight maneuvers with more than 60° of bank are not permitted in the Normal Category.

b) Utility Category:

CAUTION

Aerobatics, spinning, and flight maneuvers with more than 90° of bank are not permitted in the Utility Category.

WARNING

When exceeding 60° of bank the wearing of a parachute is man–datory.

Aerobatics and flight maneuvers with high bank angle are usually pilots voluntarily executed maneuvers.

A Spin on the contrary is usually a result of pilot error while maneu–vering at low speeds.

Do remember that since the majority of fatal stall/spin accidents oc–cur at low altitudes, from which recovery is unlikely, ***prevention*** is essential.

FLAPLESS PATTERN

SEE ALSO CHAPTER 'PATTERNS'

- SPEEDS
  ALL TARGET PATTERN SPEEDS....................................ADD 5 KNOTS

- KEYPOINTS
  – BODY ATTITUDES ....WILL BE HIGHER THAN NORMAL (TRIM!!)
  – DOWNWIND.................................... EXTEND SLIGHTLY (1/4 MILE)
  – SLOPE ....FLY A NORMAL 3° SLOPE TO RWY
  – FLARE.............................. APPLY REDUCED FLARE—DON'T FLOAT
  – GO—AROUND .... " GO-AROUND, FLAPS UP"

GO—AROUND

"GO—AROUND, FLAPS!"

POWER ....FULL
BA...ROTATE TO +9°
FLAPS............................ TAKEOFF (EXCEPT IF FLAPLESS APPROACH)
ALTIMETER & VSI... POSITIVE CLIMB

"POSITIVE CLIMB"

SPEED .... CHECK ABOVE 70 KIAS
FLAPS.. UP
SPEED ....MAINTAIN 75 KIAS

"AFTER TAKEOFF CHECKLIST"

TOC PPT MAN NORM EMER PAT LIM W&B PERF

TOUCH & GO

- DURING THE TOUCH AND GO ROLL:
  FLAPS .... UP (BY THE INSTRUCTOR)
  - VERIFY WITH INSTRUCTOR PRIOR TO RETRACTING FLAPS

"TAKEOFF, YOU HAVE CONTROL"

SHORT FIELD TAKEOFF

ALL TAKEOFFS ARE PERFORMED WITH FLAPS T/O

- TAKEOFF
  - BRAKES .... HOLD
  - POWER .... FULL
  - ENGINE INSTRUMENTS .... CHECK
  - BRAKES .... RELEASE
  - SPEED .... CHECK INCREASING—ROTATE AT 60 KIAS

- CLIMB
  - ALTIMETER & VSI .... POSITIVE CLIMB

  "POSITIVE CLIMB"

  - BA .... +10°
  - SPEED .... MAINTAIN 66 KIAS

  WHEN CLEAR OF OBSTACLES

  - SPEED .... ACCELERATE
  - SPEED .... > 70 KIAS
  - FLAPS .... UP
  - SPEED .... ACCELERATE TO NORMAL CLIMB 75 KIAS/2400 RPM

  "AFTER TAKEOFF CHECKLIST"

SHORT FIELD LANDING

- FINAL TURN COMPLETED
  - FLAPS .... LDG
  - SPEED .... 70 KIAS

  WHEN CLEAR OF OBSTACLES

  - BA .... AIM FOR THRESHOLD
  - POWER .... ADJUST FOR 70 KIAS

- TOUCHDOWN
  - BRAKES .... APPLY (GRADUALLY)

TOC PPT MAN NORM EMER PAT LIM W&B PERF

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NORMAL PROC

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INTRODUCTION

BEFORE EVERY FLIGHT DEPARTING FROM HOME BASE

1/ **COMPANY INFORMATION** .... CHECK ON WEBSITE
(BULLETINS—WARNINGS—LATEST DOCUMENTS)

2/ **WEATHER / NOTAMS / TFR'S** ....CHECK
USE WEBSITE OR 1-800-WX-BRIEF BY PHONE

3/ **ATIS** .... OBTAIN THROUGH RADIO AT DISPATCH

4/ **FLIGHT RELEASE FORM** ....PRINT & COMPLETE

5/ **AIRCRAFT TECHNICAL LOG**.............................CHECK SQUAWKS

6/ **REQUIRED EQUIPMENT**...CHECK

7/ **AIRCRAFT POUCH**................................OBTAIN FROM DISPATCH
CHECK CONTENT (KEYS—FUEL CARD—LOGBOOK)

8/ **I-M-S-A-F-E CHECKLIST**..CHECK

9/ **MISSION BRIEFING** ....CHECK

NOTES

▶A black triangle (sideways) printed in front of a checklist or flow item, indicates optional equipment and must be read as "if installed…".

Indicates a call out (to be performed out loud).

PROCEDURES FOR CHECKLISTS AND FLOWS

- Student in the left seat—Instructor in the right seat. Student will perform all flying duties, and scans and actions (flows), and all checklists, except the ones shown in the table as 'PM' - 'Pilot Monitoring'. The reader will announce the start of any checklist by calling out its title, and will read all items out loud (with sufficient pause between the items for verification and/or answer), and will announce the checklist completed by announcing its title + …"**COMPLETED**".
- 'PM' - 'Pilot Monitoring' will be the instructor. For single-pilot operations, all items listed in the table below under 'PM' will have to be performed by the 'PF'. All students must be proficient in operating the DA-40 in a single-pilot environment.

FLOW AND CHECKLIST HANDLING

Phase of Flight	Flow		Checklist	
	Performed by	Loud or Silent	Performed by	Loud or Silent
Before Start	PF	Loud	PM	Loud
After Start	PF	Loud	PM	Loud
Before Takeoff	PF	Loud	PM	Loud
Line Up	PM	Silent	N/A	N/A
After Takeoff	PF	Silent	PF (by heart)	Loud
Descent / Approach	PF	Silent	PF (by heart)	Loud
Landing	PF	Silent	PF (by heart)	Loud
After Landing	PM	Silent	PM	Silent
Shutdown	PF	Loud	PF	Loud

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- Through flight = same day, same airplane, same crew.
- Through flight walk around = fuel, oil and tires only.
- All cockpit flows must be read **out loud**.

APPROACHING THE AIRCRAFT

NEARBY OBSTACLES .... CHECK
FLAP POSITION .... NOTE

The flap position should be noted before boarding the airplane.

SURFACES .... CLEAR

Check that all movable surfaces are clear and can be moved without hitting obstacles.

ANTENNAS .... CHECK

Check presence and condition of following antennas: COM, NAV, transponder, ELT.

PRELIMINARY INSPECTION

Be careful not to use the top of the instrument panel as a support when entering or exiting the aircraft. Use the dedicated handle behind the glareshield for support.

FRONT AND REAR CANOPY .... CHECK

Verify that the canopy is clean and undamaged. Check for cracks and major scratches. Check locking mechanism. To avoid scratching the paint or damaging the wing, do not sit or put any equipment on the wing. Do not use the top of the instrument panel as a shelf for equipment at any time. Make sure not to touch the canopy with hands, equipment or charts.

FIRE EXTINGUISHER .... CHECK SECURE/ CONDITION

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CONTROL LOCKS .... REMOVE
IGNITION KEY .... CHECK OFF
HOBBS METER .... CHECK

UPPER SWITCH PANEL .... ALL SWITCHES OFF
LOWER SWITCH PANEL .... ALL SWITCHES OFF

Check pitot heat off, fuel pump off, start key pulled out, electric master off and avionics master off.

PARKING BRAKE SET .... SET

To set the parking brake: set parking brake on, then pump the brake pedals to build up pressure in the brake cylinder.

ELECTRIC MASTER SWITCH .... ON

Turn on both the BATT & ALT side. Allow the G1000 to initialize. Check database validity on MFD. Press ‘ENT twice on the MFD (lower right softkey).

FLAPS .... LDG

Set the FLAPS to T/O, monitor flap extension and indication. Then set FLAPS to LDG, monitor flap extension and indication. Leave FLAPS in LDG position for walkaround.

FUEL GAUGES .... CHECK QUANTITY
ELECTRIC MASTER SWITCH .... OFF
TRIM .... NEUTRAL

Check full control travel (both ways) of elevator trim, then, in preparation for the walk around, set in neutral position.

SUNSCREENS, PITOT COVER, TIE DOWN, CHOCKS .... REMOVED

Put sunscreens (if available) in their dedicated bag. Put pitot cover in the flight gear bag. If the aircraft's own tie-down ropes and wheel clocks were used, put in the flight gear bag.

TOW BAR .... PROPERLY STOWED
REQUIRED EQUIPMENT .... ON BOARD

The following equipment must be on board:

- Aircraft pouch containing: aircraft flight time log book, emergency sick sacs, fuel card & keys.
- Bag containing sunscreens for the windows (if available) .
- Flight gear bag containing: fuel tester, flip-up training glasses, flash light, wheel chocks, pitot cover, 3 tie-down ropes, first aid kit.
- Fire extinguisher.
- Rescue hammer.
- EASA/FAA approved airplane flight manual (POH).
- JAA/FAA required documents: certificate of airworthiness, airplane registration.
- Alternate fuel measuring device
- G1000 User manual

WALK AROUND

Walkaround is counterclockwise around the aircraft.

LEFT MAIN LANDING GEAR

LANDING GEAR STRUT .... VISUAL INSPECTION

Check visually and verify no damage or cracks.

WEAR, TREAD DEPTH OF TIRE .... VISUAL INSPECTION

Tires should be taken out of service when they have one or more flat spots. Generally, a single flat spot or skid burn does not expose the carcass body and the tire may remain in service, unless severe unbalance is reported by the crew. Small cuts are acceptable, if they do not protrude into the tire carcass. Cuts in the side wall are not acceptable. Shallow chevron-shaped cuts across the tread of a tire pose no problem; they are caused by landing on a grooved concrete runway. As long as the tread does not wear down into the body plies of the carcass, the basic strength of the tire is not affected. To provide traction during wet runway operation, operators should replace their tires when the tread reaches 1 / 32 inch = 0.79 mm.

WHEEL & BRAKES .... VISUAL INSPECTION

When checking the brakes: verify that there is even wear on the disc, no scratches, no grease, and no leaks near the brake line.

SLIP MARKS .... VISUAL INSPECTION
CHOCKS .... REMOVE

LEFT WING

ENTIRE WING SURFACE .... VISUAL INSPECTION
STEP .... VISUAL INSPECTION
AIR INTAKE ON LOWER SURFACE .... VISUAL INSPECTION
OPENINGS ON LOWER SURFACE .... VISUAL INSPECTION

Check for foreign objects and for traces of fuel (if tank is full, fuel may spill over through the tank vent).

TANK DRAIN .... DRAIN / VISUAL INSPECTION

Check for water and sediment (drain until no water or sediment comes out.

STALL WARNING DEVICE .... VISUAL INSPECTION
TANK FILLER ....VISUAL INSPECTION / CHECK CLOSED

Fuel quantity must agree with indicator.

2 STALL STRIPS ON WING..................................... VISUAL INSPECTION

PITOT STATIC PROBE ....CHECK

Check pitot probe is clean, orifices clear, cover removed and no deformation.

TIE-DOWN .... CHECK / CLEAR
LANDING / TAXI LIGHT .... VISUAL INSPECTION
WING TIP .... VISUAL INSPECTION
POSITION LIGHT, STROBE LIGHT (ACL) .... VISUAL INSPECTION
AILERON AND LINKAGE.. VISUAL INSPECTION
AILERON HINGES AND SAFETY PIN........................ VISUAL INSPECTION
FOREIGN OBJECTS IN AILERON PADDLE .... VISUAL INSPECTION
FLAP AND LINKAGE.. VISUAL INSPECTION
FLAP HINGES AND SAFETY PIN.............................. VISUAL INSPECTION

FUSELAGE, LEFT SIDE

CANOPY, LEFT SIDE.. VISUAL INSPECTION
REAR CABIN DOOR & WINDOW............................. VISUAL INSPECTION
FUSELAGE SKIN .... VISUAL INSPECTION
ANTENNAS... VISUAL INSPECTION

EMPANNAGE

STABILIZERS AND CONTROL SURFACES, ELEVATOR TIPS ....
....VISUAL INSPECTION
HINGES ....VISUAL INSPECTION
ELEVATOR TRIM TAB .... VISUAL INSPECTION / CHECK SAFETYING
RUDDER TRIM TAB ....VISUAL INSPECTION
TIE-DOWN ....CHECK / CLEAR
TAIL SKID AND LOWER FIN ....VISUAL INSPECTION

FUSELAGE, RIGHT SIDE

FUSELAGE SKIN..VISUAL INSPECTION
WINDOW ....VISUAL INSPECTION
CANOPY, RIGHT SIDE...VISUAL INSPECTION

RIGHT WING

FLAP AND LINKAGE ....VISUAL INSPECTION
FLAP HINGES AND SAFETY PIN ....VISUAL INSPECTION
AILERON AND LINKAGE ....VISUAL INSPECTION
AILERON HINGES AND SAFETY PIN ....VISUAL INSPECTION
FOREIGN OBJECTS IN AILERON PADDLE.................VISUAL INSPECTION
WING TIP...VISUAL INSPECTION
POSITION LIGHT, STROBE LIGHT (ACL)..................VISUAL INSPECTION
TIE-DOWN ....CHECK / CLEAR
ENTIRE WING SURFACE ....VISUAL INSPECTION
2 STALL STRIPS ON WING ....VISUAL INSPECTION
TANK FILLER .... VISUAL INSPECTION / CHECK CLOSED

Fuel quantity must agree with indicator.

OPENINGS ON LOWER SURFACE ....VISUAL INSPECTION

Check for foreign objects and for traces of fuel (if tank is full, fuel may spill over through the tank vent).

TANK DRAIN .... DRAIN / VISUAL INSPECTION

Check for water and sediment (drain until no water or sediment comes out.

STEP...VISUAL INSPECTION

TOC PPT MAN NORM EMER PAT LIM W&B PERF

LANDING GEAR STRUT .... VISUAL INSPECTION

Check visually and verify no damage or cracks.

WEAR, TREAD DEPTH OF TIRE .... VISUAL INSPECTION

Tires should be taken out of service when they have one or more flat spots. Generally, a single flat spot or skid burn does not expose the carcass body and the tire may remain in service, unless severe unbalance is reported by the crew. Small cuts are acceptable, if they do not protrude into the tire carcass. Cuts in the side wall are not acceptable. Shallow chevron-shaped cuts across the tread of a tire pose no problem; they are caused by landing on a grooved concrete runway. As long as the tread does not wear down into the body plies of the carcass, the basic strength of the tire is not affected. To provide traction during wet runway operation, operators should replace their tires when the tread reaches 1 / 32 inch = 0.79 mm.

WHEEL & BRAKES .... VISUAL INSPECTION

When checking the brakes: verify that there is even wear on the disc, no scratches, no grease, and no leaks near the brake line.

SLIP MARKS... VISUAL INSPECTION
CHOCKS .... REMOVE

FUSELAGE, FRONT

ENGINE OIL LEVEL ....CHECK

Check oil level through inspection hole in upper cowling. Normal oil quantity is 5.5 quarts. Minimum is 4 quarts for VFR, and 6 quarts for IFR. Do not refill when oil quantity is above 7.5 quarts.

COWLING.. VISUAL INSPECTION
3 AIR INTAKES .... CLEAR

PROPELLER & SPINNER.. VISUAL INSPECTION

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Check no detrimental nicks, cracks or dents in propeller blades, and no traces of oil (leak in the CSU). Check blades no excessive play in CSU. Maximum blade shake 3mm (1/8 inch), maximum angular play of blade: 2°. Check spinner attachment screws.

WARNING

Even in the OFF position, an engine may fire. Always treat a propeller as potentially dangerous. Do not take position underneath a propeller at any time. Never push/pull the propeller to move the aircraft. Never move the propeller by hand.

NOSE LANDING GEAR STRUT ....VISUAL INSPECTION

Check visually and verify no damage or cracks.

WHEEL...VISUAL INSPECTION
WEAR, TREAD DEPTH OF TIRE ....VISUAL INSPECTION

Tires should be taken out of service when they have one or more flat spots. Generally, a single flat spot or skid burn does not expose the carcass body and the tire may remain in service, unless severe unbalance is reported by the crew. Small cuts are acceptable, if they do not protrude into the tire carcass. Cuts in the side wall are not acceptable. Shallow chevron-shaped cuts across the tread of a tire pose no problem; they are caused by landing on a grooved concrete runway. As long as the tread does not wear down into the body plies of the carcass, the basic strength of the tire is not affected. To provide traction during wet runway operation, operators should replace their tires when the tread reaches 1 / 32 inch = 0.79 mm.

SLIP MARKS ....VISUAL INSPECTION
CHOCKS.. REMOVE
EXHAUST...VISUAL INSPECTION

FORWARD CABIN AIR INLETS .... CLEAR
NACELLE UNDERSIDE .... VISUAL INSPECTION

Check for excessive contamination particularly by oil, fuel and other fluids.

WARNING
The exhaust can cause burns when hot.

ANTENNAS..CHECK
GASCOLATOR .... DRAIN

Check for water and sediment (drain until no water or sediment comes out.

VENTING PIPES ....CHECK

MISCELLANEOUS
With battery master switch ON, then OFF

FOR NIGHT FLIGHT ONLY:
INTERIOR LIGHTING ....ON AND CHECK
EXTERIOR LIGHTING...ON AND CHECK
ALL LIGHTING SWITCHES .... OFF

FOR IMC FLIGHT ONLY:
PITOT HEAT .... ON
PITOT HEAT ANNUNCIATOR...EXTINGUISHED
PITOT PROBE ....CHECK WARM

Care should be taken when an operational check of the heated pitot head is performed. The unit becomes very hot. Ground operation should be limited to 3 minutes to avoid damaging the heater elements.

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TOC PPT MAN NORM EMER PAT LIM W&B PERF

COCKPIT PREPARATION

REAR DOOR.. CLOSED & SECURED

RUDDER PEDALS... ADJUSTED & LOCKED

The rudder pedals may only be adjusted on the ground. The pedals are unlocked by pulling the black handle which is located behind the rear attachment. Forward adjustment: while keeping the handle pulled, push the pedals forward with your feet to the desired position. Release the handle and allow the pedals to lock in place. Rearward adjustment: using the unlocking handle, pull the pedals back to the desired position. Release the handle and allow the pedals to lock in place.

The seating position should be the same for both VFR and IFR flights. Most students tend to sit too high (wanting to see over the nose of the aircraft) and too close to the instrument panel (making scanning instruments more difficult). The instructor should advise the student of the correct position. Verify that the pedals are locked by applying pressure to try to move them.

FLIGHT CONTROLS .... PROPER OPERATION

Check the flight controls for proper operation:
"Stick left, left aileron up, right aileron down, stick right, right aileron up, left aileron down. Stick aft, elevator up, stick forward, elevator down. Left rudder, right rudder".

Aileron and elevator deflections can be visually checked from the pilot's seat.

SEATBELTS .... LOCKED

Use of all available seat belts and/or harnesses per seat is mandatory. Seat belts of empty seats will be fastened and crossed over the seat bottom to prevent control interference or passenger injury during flight in turbulent air. Fasten belts before closing canopy. Do not unlock seat belts during flight or taxi at any time.

TOC PPT MAN NORM EMER PAT LIM W&B PERF

AVIONICS MASTER SWITCH .... OFF
ELECTRIC MASTER SWITCH .... ON

Turn on both the BATT & ALT side. Allow the G1000 to initialize. Check database validity on MFD. Press 'ENT' twice on the MFD (lower right softkey).

The G1000 will start its initialization process while the rest of the cockpit preparation is done.

ESSENTIAL BUS SWITCH .... OFF
ALTERNATE STATIC VALVE .... CLOSED

INSTRUMENT PANEL

DIMMER CONTROL .... SET

Use the rotary buttons to adjust instrument lighting and flood light. Day flight: OFF. Night flight: as required (avoid setting the lights too bright).

CAUTION

With the ESS BUS ON, the battery will not be charged.

LIGHT SWITCHES .... OFF
EMERGENCY SWITCH .... CHECK OFF & GUARDED
STANDBY INSTRUMENTS .... CHECKED
MAGNETIC COMPASS .... CHECK

Check magnetic compass for normal reading, no bubbles in the fluid and no leaks. Deviation chart present.

DEVIATION CARD .... CHECK
ELT .... CHECK

Check red LED not flashing, if flashing press reset.

CIRCUIT BREAKERS .... IN

TOC PPT MAN NORM EMER PAT LIM W&B PERF

If a circuit breaker needs resetting, check why it has tripped or been pulled.

G1000 .... ACKNOWLEDGE

Wait until power-up completed. Press ENT on MFD to acknowledge. Note: the engine instruments are not available on the MFD until acknowledged. Push the DISPLAY BACKUP button on the audio panel to activate the G1000 reversionary (backup) mode. Push the SYSTEM softkey on the MFD to activate the engine/system page.

FUEL QUANTITY .... CHECK
FUEL CALCULATOR .... SET
TOTAL TIME IN SERVICE .... NOTE

Write down the G1000 total time in service.

G1000 .... BACKUP OR REV. MODE
IGNITION KEY .... READY & OFF
FUEL PUMP .... OFF
PITOT HEAT .... OFF
FLAPS .... UP

CENTER CONSOLE

ALTERNATE AIR .... CLOSED
CABIN HEATER SWITCH .... OFF
DEFROSTER SWITCH .... OFF
PARKING BRAKE .... SET

The parking brake lever operates a one-way valve. Set the parking brake, then pump the brake pedals with your feet to build up pressure in the brake cylinders.

THROTTLE .... IDLE
PROPELLER .... HIGH RPM
MIXTURE .... LEAN
FRICTION .... ADJUSTED
FUEL TANK SELECTOR .... LOWEST TANK

AVIONICS MASTER .... ON
ATIS.. COPY
VFR OR IFR CLEARANCE .... COPY

Obtain from ATC or instructor.

AVIONICS MASTER .... OFF

BRIEFING.. PERFORM

Briefing must contain:

- Pilot flying
- Type of takeoff (normal or short field) and power/rpm.
- Vr and Vclimb
- Engine failure procedure
- VFR and IFR departure procedure (routing)
- Initial climb instructions+safety altitude (VFR or IFR) (altitude)
- Crosscheck of the navaid setup (radios)

Example VFR:

"I fly normal takeoff, full power, 2700RPM, flaps take off, Vr 60, Vclimb 70. In case of engine failure, lower the nose, speed 75 clean, 70 with flaps, land straight ahead or slightly left or right. VFR departure procedure: left closed traffic, 2200 feet".

Example IFR:

"I fly normal takeoff, full power, 2700RPM, flaps take off, Vr 60, Vclimb 70. In case of engine failure, lower the nose, speed 75 clean, 70 with flaps, land straight ahead or slightly left or right. IFR departure procedure: left heading 190°, climb to 4000 feet".

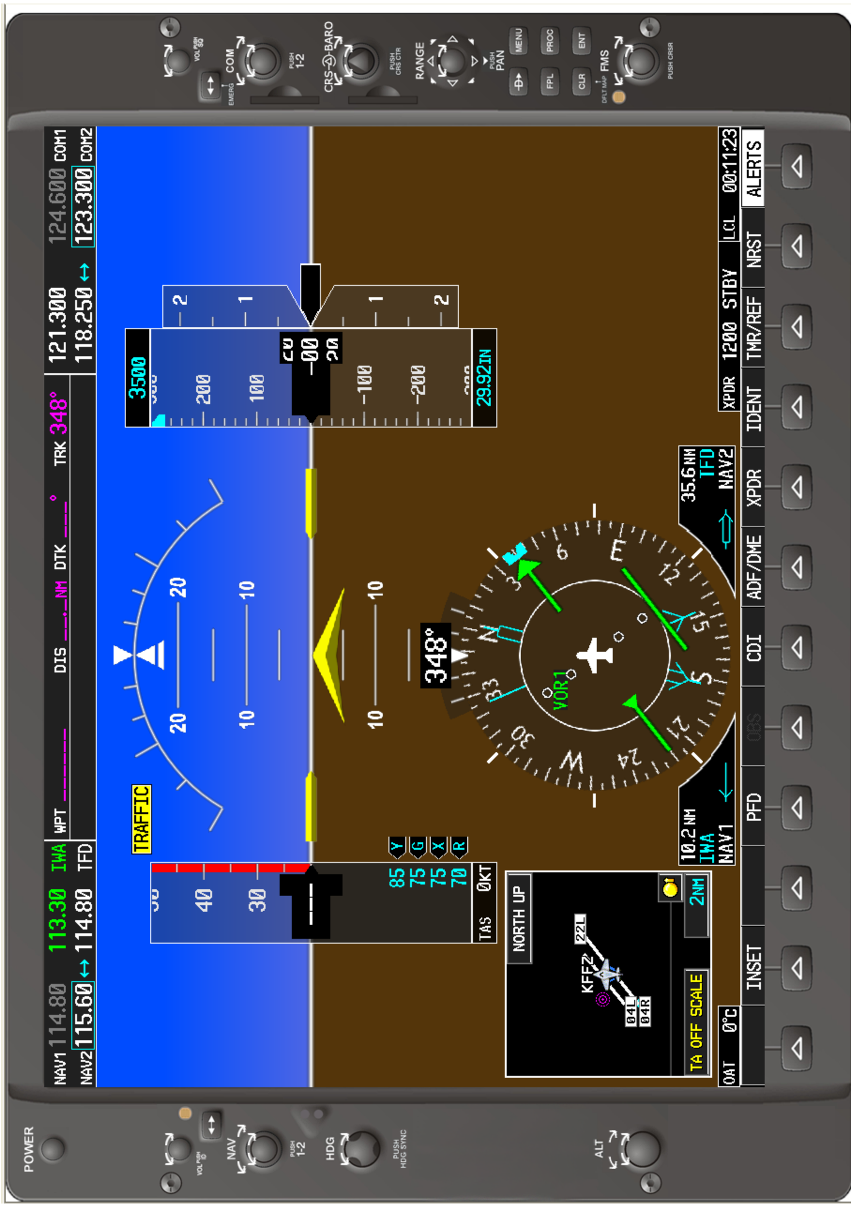
Brief your passengers about seat belts (keep fastened during whole flight), doors (how to open in an emergency), sick sacs (must ask for them before it's too late!) and the intercom (explain that, in order to respect the sterile cockpit concept during critical phases of flight, you may isolate them from the crew).

"BEFORE START CHECKLIST"

FRONT CANOPY .... POSITION 1 OR 2

sabena AIRLINE TRAINING CENTER, INC.
NORM PROC
QRH DA40-180

INTENTIONALLY LEFT BLANK



TOC PPT MAN NORM EMER PAT LIM W&B PERF

TOC PPT MAN NORM EMER PAT LIM W&B PERF

ENGINE START

Starting with the external power source: perform procedure in read -and do with DA40 AFM.

WARNING

Do not start with the canopy open.
The canopy must be in position 1 or 2 to start.

STROBE LIGHTS (DAY) OR POSITION LIGHTS (NIGHT) .... ON
ELECTRIC FUEL PUMP .... ON
THROTTLE .... HALF WAY OPEN
MIXTURE .... RICH 5 SECONDS, THEN IDLE CUTOFF
THROTTLE .... 1/2 INCH OPEN

PROPELLER AREA .... CLEAR

Check the area around the airplane. Open the window momentarily and shout "Prop clear".

IGNITION KEY .... START

Turn the start key as required to start the engine, and release when the engine has started. Do not overheat the starter motor. Do not operate the starter motor for more than 10 seconds. After 1 start cycle, apply a cooling period of 20 seconds. After 6 consecutive start cycles, apply a cooling period of 30 minutes.

MIXTURE .... FULL RICH (WHEN ENGINE FIRES)

THROTTLE .... 1000 RPM
OIL PRESSURE .... CHECK

If the oil pressure has not moved from the red range within 15 seconds after starting, shutdown the engine. Maintenance action is due.

ELECTRIC FUEL PUMP .... OFF

ANNUNCIATIONS/ENGINE/SYSTEM PAGE.................................CHECK

Check engine instruments on MFD from BOTTOM to TOP:

- Fuel quantity: checked (keep running on lowest tank until runup)
- Volts: checked
- AMPS: checked
- Oil temperature: checked (will not yet indicate anything since engine is cold)
- CHT: checked (number inside triangle indicates cylinder that is being measured)
- Fuel pressure: checked
- Fuel flow: checked
- RPM: 1000 RPM

AVIONICS MASTER SWITCH .... ON

"AFTER START CHECKLIST"

BEFORE TAXI

PITOT HEAT...CHECK

Switch pitot heat ON. Verify the amber PITOT HT OFF and STALL HT OFF annunciations disappear from the PFD. Note an increase in AMP output. Switch pitot heat OFF.

G1000 SETUP..COMPLETE

- I—INITIALIZE PROFILE (AUX4—MAP—MFD FPL—PFD FPL)
- F—FLIGHT PLAN
- R—RADIOS (COMS—VOR—ADF—DME—CDI—BRG)
- P—PERFORMANCE (SPEED BUGS)

Use the VFR and IFR (real or simulated) clearance (each item chronologically) as a guideline to set radios and navaids. COM1: ground frequency. COM1 will be the only radio used for ATC communications during the whole flight. COM2 will be the radio dedicated to ATIS and company communications during the whole flight. NAV1: first VOR required by clearance, set first radial on HSI.

NAV2: second VOR required by clearance, set radial on VOR indicator. NAV1 and NAV2 will be used as follows: at all times VOR (or LOC) in use on NAV1, next VOR on NAV2, DME and ADF: as required by clearance.

"BEFORE TAXI CHECKLIST"

TAXI

Observe wing clearances when taxiing near buildings or other objects (buildings, poles, etc). Avoid holes and ruts when taxiing over uneven ground. Do not operate the engine at high RPM when taxiing over ground containing loose stones, gravel, any other loose material, on a ramp or near a hangar to avoid damage to the propeller blades and other nearby aircraft or objects.

TAXI LIGHT .... ON
MIXTURE ....LEAN

Lean the mixture (approx. 1 inch).

CAUTION

Following extended operation on ground (or at high ambient temperatures) fuel vapor lock may occur, which will yield following symptoms:

Random changes in IDLE RPM / FUEL FLOW
SLOW ENGINE RESPONSE
ENGINE WILL NOT RUN IN IDLE

The remedy is to run the engine at 2000 RPM for 2 minutes (oil and cylinder head temperatures must remain in limits). Vapor lock can be avoided if the engine is run at speeds of 1800 RPM or more. This results in lower fuel temperature. Check the aircraft AFM 'Chapter NORMAL OPERATING PROCEDURES—TAXIING' for more information.

AREA...FREE

Check the area around the airplane. Call out "Left is free, free right?" Instructor will reply "Right is free". In case of solo flights, the

call out will be "Left is free, right is free" after having verified both sides.

PARKING BRAKE .... RELEASE

BRAKES ....CHECK

Perform brake check immediately after the aircraft starts rolling. Apply light and even pressure on both pedals. It is not necessary to bring the aircraft to a complete stop. As soon as it becomes apparent that normal brake pressure is available, release the brakes again. Ask the pilot in the right seat to perform a brake check as follows "Brakes checked, you have controls, check your brakes". The right seat pilot will reply "I have controls" and perform the brake check, then he will announce "Brakes, checked you have controls". Pilot flying (left seat pilot) will reply "I have controls" and continue taxi.
Taxi turns can be made using rudder pedal motion only. Brakes are only needed to reduce the taxi speed or when maneuvering in tight spaces. On the ground and in flight, the pilot's feet should be in an almost horizontal position-heels on the floor, toes on the lower part of the rudder pedals-sliding the feet up on the rudder pedals only when required to apply brakes.

FLIGHT INSTRUMENTS..CHECK

In a left turn: "Turning left (=> check turn coordinator going left), skidding right (=> check side slip going right), HSI and compass decreasing (=> check numbers on HSI and magnetic compass decreasing), horizon level (=> check attitude indicator level)".

In a right turn: "Turning right, skidding left, HSI and compass increasing, horizon level".

The checks need to be done only once, in a left turn or a right turn, outside congested area.

GROUND CHECK

NOSE WHEEL...STRAIGHT

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To prevent high side loads on the nose wheel. Wind more than 10 knots: turn the aircraft into the wind to avoid abnormal propeller loads and to ensure adequate engine cooling during run-up. Wind 10 knots or less, park the aircraft in any convenient position where prop wash cannot cause damage to an aircraft behind you. To prevent a collision in case of inadvertent brake release during engine run-up, never point the propellers in the direction of another aircraft, and never 'hook' your wing into the wing of another aircraft parked ahead of you. When no run-up area available, perform the ground check on the taxiway with the aircraft at an angle of approximately 30° referenced to the taxiway centerline.

PARKING BRAKE .... SET

The parking brake lever operates a one-way valve. Set the parking brake, then pump the brake pedals with your feet to build up pressure in the brake cylinders.

ENGINE PAGE .... NORMAL

Note that oil pressure may be in the yellow range with a warm engine and throttle at IDLE.

MIXTURE .... FULL RICH
FUEL TANK SELECTOR .... FULLEST TANK
AREA BEHIND ....FREE

Always check the area behind the aircraft before starting the ground check, and call out: "Area behind free".

THROTTLE .... 2000 RPM
ALTERNATE AIR.. CHECK OPERATION

Observe +/- 25 RPM drop. CAUTION! Alternate air is unfiltered. Use of alternate air during ground or flight operations when dust or other contaminants are present may result in damage from particle ingestion.

PROPELLER ....CYCLE

Cycle the propeller 3 times. Do not allow the drop to exceed 300 RPM. First cycle: check RPM drop, second cycle, check MAP increase, third cycle, check oil pressure decreasing.

MAGNETOS .... CHECK (L—BOTH—R—BOTH)

Drop off on either magneto should not exceed 175 RPM and the difference between the magnetos should not exceed 50 RPM. Operation on 1 magneto should not exceed 10 seconds. If RPM does not drop, flight is not permitted as a hot magneto exists (faulty grounding of one side of the ignition system). If excessive drop is noted, try to clear the spark plugs from lead deposits by leaning the mixture (at 2000 RPM) to peak RPM, and then rechecking the ignition. Company procedure: no full throttle runups in the runup area allowed!

ENGINE PAGE .... NORMAL

THROTTLE .... IDLE THEN 1000 RPM

Engine not faltering at idle RPM.

MIXTURE .... LEAN

Lean the mixture (approx. 1 inch).

BEFORE TAKEOFF

CONTROLS .... FREE
CIRCUIT BREAKERS .... IN
G1000 .... REV. MODE
IGNITION .... BOTH
FUEL PUMP .... ON
FLAPS .... TO

Normal takeoff FLAPS UP (CRUISE), short field takeoff FLAPS T/O.

ALTERNATE AIR .... CLOSED
PROPELLER .... MAX RPM

MIXTURE .... SET
TRIM .... SET
FUEL SELECTOR .... FULLEST TANK

SHORT BRIEFING .... PERFORM

The short briefing will include:

- Type of takeoff (normal or short or soft)
- Initial heading and altitude
- "Confirmed?" The instructor answers "Confirmed" or amends as necessary.

Example VFR:

"Normal takeoff, heading 090°, 3.500FT, confirmed?" – "Confirmed".

FRONT CANOPY .... CLOSED & LOCKED
DOOR WARNING .... CHECK OFF

"BEFORE TAKEOFF CHECKLIST"

LINE-UP

When ATC clearance (if required) received and acknowledged to line up, FIRST release the parking brake and start to roll to the runway, THEN perform the following actions (while taxiing). Fast taxi turns immediately prior to takeoff should be avoided to prevent unporting fuel feed lines. On request of PF "Line-up items", the starred * items may be performed by the PM.

APPROACH .... FREE

Visually clear the final approach area before entering the runway and call out: "Approach free".

LANDING LIGHT .... ON
TAXI LIGHTS .... OFF
STROBE LIGHTS .... ON
ALTIMETER .... CHECK (3X)

Read threshold elevation from Jeppesen or other airport chart and call out: "Threshold elevation _____feet". This may be done while taxiing out of the run-up area. Altimeter reading should not differ more than 60 feet from threshold elevation at sea level and 80 feet at 5000 feet pressure altitude.

COMPASS SYSTEM.. RUNWAY HEADING

This is a runway + compass system check. Read runway heading from chart, takeoff data (QFU) and call out: "Runway heading _____ degrees". Check HSI and magnetic compass. Maximum difference allowed between published runway heading and any compass system is 6°. If a large discrepancy exists, do not take off, but investigate the cause first (wrong runway, compass system malfunction).

PITOT HEAT ....AS REQUIRED

Switch pitot heat ON. Verify the amber PITOT HT OFF and STALL HT OFF annunciations disappear from the PFD.

MIXTURE..AS REQUIRED

Set the mixture as required for takeoff.

TAKE-OFF

Before applying engine power for takeoff, top the timer and call out: "Takeoff, I have control". The instructor will confirm: "You have control".

THROTTLE ....GRADUALLY FULLY FORWARD
PARAMETERS ....CHECK

Check:

- ANNUNCIATIONS ....CHECK
- INSTRUMENTS...CHECK
- MAP .... STABILIZES 29"
- RPM ....STABILIZES 2700 RPM

Call out : "Power checked".

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Note:

1. The proper performance of the engine at full throttle should be checked early in the take-off procedure, so that the take-off can be abandoned if necessary.
2. A rough engine, sluggish RPM increase, or failure to reach take-off RPM (2680 +/- 20 RPM) are reasons for abandoning take-off. If engine oil is cold, an oil pressure in the yellow sector is permissible.
3. Takeoffs are made with full throttle.

Check airspeed increasing and call out: "Speed checked".

At Vr, call out "60 knots, rotate" and rotate smoothly to a BA of 9°. Avoid abrupt, premature or late rotation. Climb 70 knots to 300 FT AGL, select flaps UP

AFTER TAKEOFF

As soon as the aircraft is in clean configuration 70 KIAS.: reduce RPM by 300 => 2400 RPM. Keep full throttle. Above 1000 FT AGL climb 75 knots, 2400RP (cruise climb)

Perform following actions at 1.000 FT AGL.

FLAPS...UP
FUEL PUMP ....OFF

Keep the fuel pump ON if remaining in the pattern.

ENGINE INSTRUMENTS.. CHECK
LANDING LIGHT .... AS REQUIRED
TRANSPONDER...CODE & ALT
MAP PAGE ....SWITCH

When out of the traffic pattern and congested area, switch off the landing lights. Do not switch off the landing lights when remaining in the traffic pattern , transiting controlled airspace or in the practice area.

"AFTER TAKEOFF CHECKLIST"

CLIMB

Enroute climb is 85 KIAS with 2400 RPM. Accelerate to this speed when passing through 1.000 feet AGL for better forward speed, engine cooling and increased visibility over the nose during climb.

CRUISE

Cruise checklist should be performed every 15 minutes.

FUEL STATUS .... CHECK

Switching of tanks is required on a regular bases. Maximum allowable imbalance is 10 USG. When switching tanks, fuel pump should be ON.

FUEL PUMP .... ON AT HIGH ALTITUDES
ENGINE INDICATIONS / SYSTEM PAGE .... CHECK

<u>Mixture adjustment:</u>

- Best economy only allowed below 75% power (27 MAP / 2200 RPM or 26 MAP / 2400 RPM).
- Use the G1000 leaning assistant.
- Maximum CHT is 500°F.
- Best economy: lean for peak EGT. Best power: lean 100°F rich of peak EGT.
- Enrichen each time for higher power settings (climb) or descending to destination.

Cruise speed with 55% power (21 MAP / 2400 RPM) will be 120-125 KTAS (approx. 110 KIAS). Fuel flow will be approximately 8 GPH (best economy).

DESCENT-APPROACH

When the altimeter setting for the destination airport is set:

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TOC PPT MAN NORM EMER PAT LIM W&B PERF

LANDING LIGHT .... ON
ALTIMETER .... SET (3X)

Set local altimeter setting for the destination airport. Complete answer to this checklist item is: "_____(altimeter setting) set". Set altimeter bug on pattern altitude when VFR, or on DA or MDA when IFR.

ENGINE INDICATIONS / SYSTEM PAGE .... CHECKED
FUEL PUMP .... ON
MIXTURE .... ENRICHEN AS REQUIRED
FUEL SELECTOR .... AS REQUIRED

"DESCENT-APPROACH CHECKLIST"

LANDING

Downwind:

FLAPS .... AS REQUIRED

Turning base:

BRAKES .... CHECKED

After checking the brakes, make sure to slide your feet back to the normal position (heels on floor, toes on lower part of the pedals).

PARKING BRAKE .... OFF
FLAPS .... AS REQUIRED
PROPELLER .... MAX RPM
MIXTURE .... FULL RICH

"LANDING CHECKLIST"

TOUCHDOWN

Maintain desired approach flight path with BA. Maintain desired airspeed with power. Reduce power to idle during the flare before the main wheels touch the runway. This gives the gear warning horn a chance to blow if the gear is not locked down. After ground contact, hold the nose wheel off as long as possible. Braking-if needed-is most effective when back pressure is applied to the control wheel, putting most of the aircraft weight on the main wheels. When the headwind component exceeds 15 knots, or when the crosswind component exceeds 10 knots, as well as in gusty wind conditions, the approach will be flown at a slightly higher than normal speed (+5 KIAS) with T/O FLAPS.

AFTER LANDING

Runway vacated, aircraft stopped behind hold short line. On request of PF "After landing items".

LANDING LIGHT .... OFF
TAXI LIGHT .... ON
TRANSPONDER .... CODE & GROUND
FUEL PUMP .... OFF
PITOT HEAT .... OFF
FLAPS .... UP
MIXTURE .... LEAN

Lean the mixture (approx. 1 inch).

"AFTER LANDING CHECKLIST "

SHUTDOWN

TAXI LIGHT .... OFF
ENGINE/SYSTEM PAGE .... CHECKED

Write down the G1000 total time in service.

AVIONICS MASTER .... OFF
MIXTURE .... CUTOFF

STROBE LIGHTS .... OFF
IGNITION KEY .... OFF & KEY REMOVED
ELECTRIC MASTER SWITCH .... OFF
PARKING BRAKE .... AS REQUIRED

Never taxi the aircraft facing fuel pumps with engines running, park parallel to pumps. Stop with plenty of space, then pull the aircraft forward into the fueling position. Do not set parking brake unless on a slope.

"SHUTDOWN CHECKLIST"

MOORING

PARKING BRAKE .... RELEASE

Push aircraft backward or pull aircraft forward into parking space using the tow bar for steering. Do not turn the nose gear beyond its steering radius in either direction as this will result in damage to the nose gear and steering mechanism.

TOW BAR .... STOW PROPERLY
SUNSCREENS, PITOT COVER, TIE-DOWN, CHOCKS .... INSTALL

Tie-down ropes are required when the aircraft is left unattended longer than for a normal crew change. If no tie-down ropes are available on ramp, use the aircraft tie-down ropes (in flight gear bag). Secure tie-down ropes to the wing tie-down rings and to the tail skid at approximately 45° angles to the ground. Use bowline knots, square knots or locked slip knots. Do not use plain slip knots.

Parking brake is required when aircraft is not tied down, but with the crew around. Do not set parking brake when the brakes are overheated!

Wheel chocks are required when the aircraft is not tied down and left unattended. If no wheel chocks available at the FBO, use the aircraft's own wheel chocks (in flight gear bag).

CONTROL LOCKS .... INSTALL
SEAT BELTS .... LOCK

Seat belts of all seats will be fastened.

PERSONAL BELONGINGS AND TRASH .... REMOVE
CANOPY AND DOORS .... CLOSE & SECURE

Lock with key.

If required: fill in strip in aircraft squawk book and report problem to dispatch and maintenance.

If required: fill in ASR.

Return aircraft key to dispatch.

If required: close flight plan.

FLOWS ARE INTENDED TO PROVIDE A LOGICAL SEQUENCE IN WHICH THE ITEMS CAN BE DONE AND SHOULD BE FOLLOWED BY A CHECK-LIST AT ALL TIMES, EXCEPT FOR THE WALKAROUND.

PRE—FLIGHT PREPARATION FLOW

ALL PERTINENT INFORMATION CONCERNING FLIGHT .... CHECK
FLIGHT RELEASE FORM .... COMPLETE
AIRPLANE SQUAWK BOOK .... CHECK
EQUIPMENT REQUIRED FOR FLIGHT .... CHECK
AIRCRAFT KEYS AND POUCH .... CHECK
I-M-S-A-F-E CHECKLIST .... CHECK
MISSION BRIEFING .... CHECK

WALKAROUND FLOW

APPROACHING THE AIRCRAFT

NEARBY OBSTACLES .... CHECK
FLAP POSITION .... NOTE
SURFACES .... CLEAR
ANTENNAS .... CHECK

PRELIMINARY INSPECTION

FRONT CANOPY & REAR DOOR .... CHECK
FIRE EXTINGUISHER .... CHECK SECURE / CONDITION
CONTROL LOCKS .... REMOVE
IGNITION KEY .... CHECK OFF & KEY REMOVED
HOBBS METER .... CHECK
UPPER SWITCH PANEL .... ALL SWITCHES OFF
LOWER SWITCH PANEL .... ALL SWITCHES OFF
PARKING BRAKE .... SET
ELECTRIC MASTER SWITCH .... ON
FLAPS .... CHECK DOWN
FUEL GAUGES .... CHECK QUANTITY
ELECTRIC MASTER SWITCH .... OFF
TRIM .... NEUTRAL
SUNSCREENS, PITOT COVER, STALL WARNING COVER & TIE-DOWN .... CHECK
CHOCKS .... CHECK
TOWBAR .... PROPERLY STOWED
REQUIRED EQUIPMENT .... ON BOARD

LEFT MAIN LANDING GEAR

LANDING GEAR STRUT .... CHECK

WEAR, TREAD & DEPTH OF TIRE .... CHECK
WHEEL BRAKES / HYDRAULIC BRAKE LINE .... CHECK
SLIP MARKS .... CHECK
CHOCKS .... REMOVE

LEFT WING

WING SURFACE .... CHECK
STEP .... CHECK
AIR INTAKES ON LOWER SURFACE .... CHECK
OPENINGS ON LOWER SURFACE .... CHECK
TANK DRAIN .... CHECK
STALL WARNING DEVICE .... CHECK
TANK FILLER .... CHECK / CLOSE
STALL STRIPS .... CHECK
PITOT STATIC PROBE .... CHECK
TIE-DOWN .... CHECK/CLEAR
LANDING LIGHT / TAXI LIGHT .... CHECK
WING TIP .... CHECK
POSITION LIGHT / STROBE LIGHT .... CHECK
AILERON AND LINKAGE .... CHECK
AILERON HINGES AND SAFETY PIN .... CHECK
FOREIGN OBJECTS IN AILERON PADDLE .... CHECK
FLAP AND LINKAGE .... CHECK
FLAP HINGES & SAFETY PIN .... CHECK

FUSELAGE LEFT SIDE

CANOPY LEFT SIDE .... CHECK
REAR CABIN DOOR & WINDOW .... CHECK / CLOSE & LOCK
FUSELAGE SKIN .... CHECK
ANTENNAS .... CHECK

EMPANNAGE

STABILIZERS & CONTROL SURFACES/ELEVATOR TIPS .... CHECK
HINGES .... CHECK
ELEVATOR TRIM TAB .... CHECK
RUDDER TRIM TAB .... CHECK
TIE DOWN .... CHECK/CLEAR
TAIL SKID & LOWER FIN .... CHECK

FUSELAGE RIGHT SIDE

TOC PPT MAN NORM EMER PAT LIM W&B PERF

FUSELAGE SKIN .... CHECK
WINDOW .... CHECK / CLOSE & LOCK
CANOPY RIGHT SIDE .... CHECK

RIGHT WING

FLAP AND LINKAGE .... CHECK
FLAP HINGES & SAFETY PIN .... CHECK
AILERON AND LINKAGE .... CHECK
AILERON HINGES AND SAFETY PIN .... CHECK
FOREIGN OBJECTS IN AILERON PADDLE .... CHECK
WING TIP .... CHECK
POSITION LIGHT / STROBE LIGHT .... CHECK
TIE-DOWN .... CHECK/CLEAR
WING SURFACE .... CHECK
STALL STRIPS .... CHECK
TANK FILLER .... CHECK / CLOSE
OPENINGS ON LOWER SURFACE .... CHECK
TANK DRAIN .... CHECK
STEP .... CHECK

RIGHT MAIN LANDING GEAR

LANDING GEAR STRUT .... CHECK
WEAR, TREAD & DEPTH OF TIRE .... CHECK
WHEEL BRAKES / HYDRAULIC BRAKE LINE .... CHECK
SLIP MARKS .... CHECK
CHOCKS .... REMOVE

FUSELAGE FRONT & NOSE GEAR

ENGINE OIL LEVEL .... CHECK
COWLING .... CHECK
3 AIR INTAKES .... CHECK
PROPELLER & SPINNER .... CHECK
NOSE LANDING GEAR STRUT .... CHECK
WEAR, TREAD & DEPTH OF TIRE .... CHECK
SLIP MARKS .... CHECK
CHOCKS .... REMOVE
EXHAUST .... CHECK
FORWARD CABIN AIR INLETS .... CHECK
NACELLE UNDERSIDE .... CHECK
ANTENNAS .... CHECK
GASCOLATOR .... DRAIN

VENTING PIPES....CHECK

MISCELLANEOUS

INTERIOR LIGHTING....ON & CHECK
EXTERIOR LIGHTING....ON & CHECK
ALL LIGHTING SWITCHES....OFF
PITOT HEAT....ON
PITOT HEAT ANNUNCIATOR....EXTINGUISHED
PITOT STATIC PROBE....CHECK WARM
PITOT HEAT....OFF

COCKPIT PREPARATION FLOW

REAR DOOR....CLOSED & SECURED
RUDDER PEDALS....ADJUSTED & LOCKED
FLIGHT CONTROLS....PROPER OPERATION
SEATBELTS....LOCKED
AVIONICS MASTER SWITCH....OFF
ELECTRIC MASTER SWITCH....ON
ESSENTIAL BUS SWITCH....OFF
ALTERNATE STATIC VALVE....CHECK
DIMMER CONTROL....SET
LIGHT SWITCHES....OFF
EMERGENCY SWITCH....CHECK OFF & GUARDED
STANDBY INSTRUMENTS....CHECKED
MAGNETIC COMPASS....CHECK
DEVIATION CARD....CHECKED
ELT....CHECKED
CIRCUIT BREAKERS....IN
G1000....ACKNOWLEDGE
FUEL QUANTITY....CHECK
FUEL CALCULATOR....SET
TOTAL TIME IN SERVICE (HOBBS)....NOTE
G1000....BACKUP OR REV MODE
IGNITION KEY....READY AND OFF
FUEL PUMP....OFF
PITOT HEAT....OFF
FLAPS....UP
ALTERNATE AIR....CHECK CLOSED
CABIN HEATER SWITCH....OFF
DEFROSTER SWITCH....OFF
PARKING BRAKE....SET
THROTTLE....IDLE
PROPELLER....HIGH RPM

MIXTURE....CUTOFF
FRICTION LEVER....ADJUST
FUEL SELECTOR....LOWEST TANK
AVIONICS MASTER....ON
ATIS/VFR OR IFR CLEARANCE....COPY
AVIONICS MASTER....OFF
BRIEFING....PERFORM

"BEFORE START CHECKLIST"

FRONT CANOPY....POSITION 1 OR 2

ENGINE START FLOW

STROBE LIGHTS (DAY) OR POSITION LIGHTS (NIGHT)....ON
FUEL PUMP....ON
THROTTLE....HALF OPEN
MIXTURE....RICH FOR SECONDS THEN IDLE CUTOFF
THROTTLE....HALF 1/2 INCH OPEN
PROPELLER AREA....CLEAR
IGNITION KEY....START
MIXTURE....FULL RICH WHEN ENGINE FIRES
RPM....1000
OIL PRESSURE....CHECK
FUEL PUMP....OFF
ENGINE SYSTEM PAGE/VOLTAGE & AMPS....CHECK
AVIONICS MASTER SWITCH....ON

"AFTER START CHECKLIST"

BEFORE TAXI FLOW

PITOT HEAT....CHECK
G1000 SET UP (I-F-R-P)....COMPLETE

"BEFORE TAXI CHECKLIST"

TAXI FLOW

TAXI LIGHT....ON
MIXTURE....LEAN
AREA....FREE
PARKING BRAKE....RELEASE
BRAKES....CHECK
FLIGHT INSTRUMENTS....CHECK

GROUND CHECK

NOSE WHEEL............STRAIGHT
PARKING BRAKE............SET
ENGINE PAGE............NORMAL
MIXTURE............FULL RICH
FUEL SELECTOR............FULLEST TANK
AREA BEHIND............FREE
THROTTLE............2000 RPM
ALTERNATE AIR............CHECK OPERATION
PROPELLER............CYCLE
MAGNETOS............CHECK
ENGINE PAGE............NORMAL
THROTTLE............IDLE, THEN 1000 RPM
MIXTURE............LEAN

BEFORE TAKEOFF FLOW

CONTROLS............FREE
CIRCUIT BREAKERS............IN
G1000............REV. MODE
IGNITION............BOTH
FUEL PUMP............ON
FLAPS............TO
ALTERNATE AIR............OFF
PROPELLER............MAX RPM
MIXTURE............AS REQUIRED
TRIM............SET
FUEL SELECTOR............FULLEST TANK
SHORT BRIEFING............PERFORM
FRONT CANOPY............CLOSED & LOCKED
DOOR WARNING............CHECK OFF

"BEFORE TAKEOFF CHECKLIST"

LINE UP FLOW

APPROACH............FREE
LANDING LIGHTS............ON
TAXI LIGHTS............OFF
STROBE LIGHTS............ON
ALTIMETER............CHECK (3X)
COMPASS SYSTEM............CHECK
PITOT HEAT............AS REQUIRED
MIXTURE............AS REQUIRED

TOC
PPT
MAN
NORM
EMER
PAT
LIM
W&B
PERF

TAKEOFF FLOW

THROTTLE............GRADUALLY FULLY FORWARD
PARAMETERS............CHECK

AFTER TAKEOFF FLOW

FLAPS............UP
FUEL PUMP............OFF
ENGINE INSTRUMENTS............CHECK
LANDING LIGHT............AS REQUIRED
TRANSPONDER............CODE & ALT
MAP PAGE............SWITCH

"AFTER TAKEOFF CHECKLIST"

CRUISE FLOW

FUEL STATUS............CHECK
FUEL PUMP............USE AT HIGH ALTITUDES
ENGINE INDICATIONS / SYSTEM PAGE............CHECK

DESCENT / APPROACH FLOW

LANDING LIGHT............ON
ALTIMETER............ON
ENGINE INDICATIONS/SYSTEM PAGE............CHECKED
FUEL PUMP............ON
MIXTURE............ENRICHEN AS REQUIRED
FUEL SELECTOR............AS REQUIRED

"DESCENT / APPROACH CHECKLIST"

LANDING FLOW

BRAKES............CHECKED
PARKING BRAKE............OFF
PROPELLER............MAX RPM
MIXTURE............FULL RICH
FLAPS............AS REQUIRED

"LANDING CHECKLIST"

AFTER LANDING FLOW

LANDING LIGHT .... OFF
TAXI LIGHT .... ON
TRANSPONDER .... CODE & GROUND
FUEL PUMP .... OFF
PITOT HEAT .... OFF
FLAPS .... UP
MIXTURE .... LEAN

"AFTER LANDING CHECKLIST"

ENGINE SHUTDOWN FLOW

TAXI LIGHT .... OFF
ENGINE PAGE (TOTAL TIME IN SERVICE) .... CHECKED
AVIONICS MASTER .... OFF
MIXTURE .... CUT OFF
STROBE LIGHTS (DAY) OR POSITION LIGHTS (NIGHT) .... OFF
IGNITION KEY .... OUT
ELECTRIC MASTER SWITCH .... OFF
PARKING BRAKE .... AS REQUIRED

"SHUTDOWN CHECKLIST"

MOORING FLOW

PARKING BRAKE .... RELEASE
TOW BAR .... STOW PROPERLY
SUNSCREENS, STALL WARNING COVER, PITOT COVER .... INSTALL
CONTROL LOCKS .... INSTALL
SEAT BELTS .... LOCK
PERSONAL ITEMS .... REMOVE
CANOPY .... CLOSE AND LOCK
AIRCRAFT TIE DOWNS .... SECURED

TOC PPT MAN NORM EMER PAT LIM W&B PERF

TOC PPT MAN NORM EMER PAT LIM W&B PERF

BEFORE START CHECKLIST

WALK AROUND .... COMPLETED
RUDDER PEDALS .... ADJUSTED AND LOCKED
SEAT BELTS .... LOCKED
PARKING BRAKE .... SET
AVIONICS MASTER SWITCH .... OFF
ELECTRIC MASTER SWITCH .... ON
ESSENTIAL BUS SWITCH .... OFF
CIRCUIT BREAKERS .... IN
FLAPS .... AS REQUIRED
G1000 .... ACKNOWLEDGE
FUEL PUMP .... OFF
FUEL QUANTITY .... CHECKED
IGNITION .... OFF & KEY READY
ALTERNATE AIR .... CLOSED
THROTTLE .... IDLE
PROPELLER .... MAX RPM
MIXTURE .... CUTOFF
FUEL SELECTOR .... LOWEST TANK

AFTER START CHECKLIST

OIL PRESSURE .... CHECKED
ANNUNCIATORS/ENGINE/SYSTEM PAGE .... CHECKED

BEFORE TAXI CHECKLIST

PITOT HEAT .... CHECKED
G1000 SET UP .... COMPLETED

BEFORE TAKEOFF CHECKLIST

FLIGHT INSTRUMENTS .... CHECKED
ENGINE INSTRUMENTS .... CHECKED
FLAPS .... T/O
FUEL PUMP .... ON
IGNITION .... BOTH
MIXTURE .... AS REQUIRED
PROPELLER .... MAX RPM
FUEL SELECTOR .... FULLEST TANK
TRIM .... SET
FLIGHT CONTROLS .... FREE
CANOPY & DOORS .... CLOSED & SECURED

AFTER TAKEOFF CHECKLIST

● These items only when remaining in the pattern

- ● FLAPS .... UP
- FUEL PUMP .... OFF
- ● ENGINE INSTRUMENTS .... CHECK
- LANDING LIGHT .... AS REQUIRED

DESCENT APPROACH CHECKLIST

● These items only when remaining in the pattern

- LANDING LIGHTS .... ON
- ALTIMETER .... SET (2X)
- ● ENGINE INDICATIONS/SYSTEM PAGE .... CHECKED
- FUEL PUMP .... ON
- ● FUEL SELECTOR .... FULLEST TANK

LANDING CHECKLIST

- BRAKES .... CHECK
- PARKING BRAKE .... OFF
- PROPELLER .... MAX RPM
- MIXTURE .... FULL RICH
- FLAPS .... AS REQUIRED

AFTER LANDING CHECKLIST

- LANDING LIGHT .... OFF
- TAXI LIGHT .... ON
- TRANSPONDER .... CODE & GROUND
- FUEL PUMP .... OFF
- PITOT HEAT .... OFF
- FLAPS .... UP
- MIXTURE .... LEAN

SHUTDOWN CHECKLIST

- AVIONIC MASTER SWITCH .... OFF
- MIXTURE .... CUTOFF
- IGNITION KEY .... OFF AND OUT
- ELECTRIC MASTER SWITCH .... OFF
- PARKING BRAKE .... AS REQUIRED
- PILOT OVERHEAD READING LIGHT .... CHECK OFF

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G1000 WARNINGS

Warning	Page	Description
OIL PRES LO	4.4	Oil pressure low (red range)
FUEL PRES LO	4.5	Fuel pressure low (red range)
FUEL PRES HI	4.5	Fuel pressure high (red range) (No procedure)
ALTERNATOR	4.5	Alternator failure
STARTER ENGD	4.6	Starter not disengaging
DOOR OPEN	4.6	Unlocked doors

OTHER EMERGENCY PROCEDURES

Situation	Page	Situation	Page
EMERGENCY LANDING	4.3	TOTAL ELECTRICAL FAILURE	4.9
WINDMILL ENGINE RESTART	4.3	ENGINE FIRE	4.9 4.10
SPIN RECOVERY	4.6	ELECTRICAL FIRE	4.10 4.11
ENGINE ROUGHNESS / POWER LOSS	4.7	SUSPICION CARBON MONOXIDE	4.11
RPM OVERSPEED	4.7	UNINTENTIONAL FLIGHT IN ICING	4.11
RPM UNDERSPEED	4.8	LDG WITH DEFECTIVE BRAKES	4.12
POWERED ENGINE RESTART	4.8	LDG WITH DEFECTIVE MAIN TIRE	4.12

G1000 CAUTIONS

Warning	Page	Description
PITOT OFF	4.13	Pitot heating system OFF
PITOT FAIL	4.13	Pitot heating system failed
L FUEL LOW		Left tank fuel qty low (<3 USG)
R FUEL LOW		Right tank fuel qty low (<3 USG)
VOLTS LOW	4.13	Bus voltage too low

OTHER ABNORMAL PROCEDURES

Situation	Page	Situation	Page
OIL TEMP HIGH	4.14	FUEL FLOW HIGH	4.15
CHT HIGH/ LOW	4.15	VOLTS HIGH	4.16
EGT HIGH/ LOW	4.15	MAP HIGH	4.16

WINDMILL ENGINE RESTART (ENGINE FAILURE)

1 AIRSPEED..75-80 KIAS
2 FUEL SELECTOR .... FULLEST TANK
3 IGNITION .... BOTH
4 MIXTURE ....FULL RICH
5 FUEL PUMP .... ON
6 ALTERNATE AIR ....OPEN

If no success

7 MIXTURE .... LEAN then SLOWLY to RICH

If no success, Perform EMERGENCY LANDING Checklist

EMERGENCY LANDING

1 AIRSPEED..75KIAS, 70 FLAPS T/O or 60 FLAPS LDG
2 TRANSPONDER .... SQUAWK 7700
3 MAYDAY CALL .... PERFORM
4 FUEL SELECTOR .... OFF
5 MIXTURE ....IDLE CUT-OFF
6 IGNITION .... OFF
7 FLAPS .... AS REQUIRED

When flaps extension not required anymore

8 MASTER SWITCH... OFF
9 SEAT BELTS & HARNESSES ....TIGHTEN

OIL PRES LO

1 OIL PRESS .... CHECK
2 OIL TEMP... CHECK
3 CYL HEAD TEMP...................................... CHECK

If Oil Temp & Cyl Head Temp are normal.

4 OIL TEMP & CYL HEAD TEMP .... MONITOR

Land at Nearest suitable airport

If Oil Temp & Cyl Head Temp are NOT normal (or rising).

5 ENGINE POWER ....REDUCE TO MIN

Land ASAP, be prepared for Emergency Landing.

If Oil Press near zero, vibration, loss of oil, smoke.

6 TOTAL ENGINE FAILURE ....SUSPECT
7 ENGINE.. SHUT DOWN

Perform the Emergency Landing Checklist

FUEL PRES LO

1 FUEL FLOW .... CHECK

If Fuel Flow high (red range), suspect fuel leak.

Land ASAP

FUEL PRES HI

1 FUEL FLOW .... CHECK

Land at nearest suitable airfield

ALTERNATOR

1 CIRCUIT BREAKERS .... CHECK
2 ALTERNATOR LOAD.................................. CHECK
3 MASTER SWITCH (ALT) .... OFF, then ON

If warning disappears and Alternator Load is normal
Continue normal operations

If warning remains
4 ESSENTIAL BUS ....ON
5 ELECTRICAL LOAD .... REDUCE
Land within 30 minutes

If PFD attitude information is lost
6 HORIZON EMERGENCY SWITCH ....ON

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STARTER ENGD

1 THROTTLE ....IDLE
2 MIXTURE...................................... IDLE CUT OFF
3 IGNITION ....OFF
4 MASTER SWITCH.......................................OFF

Do NOT attempt restart.

DOOR OPEN

1 AIRSPEED.. REDUCE
2 CANOPY AND REAR DOOR.......... CHECK VISUALLY
3 CANOPY / REAR DOOR...............................LATCH

If unable to latch door

Land ASAP

Warning! Never unlatch rear door in flight.

SPIN RECOVERY

Perform items 1-4 immediately & simultaneously.

1 THROTTLE ....IDLE
2 RUDDER................. FULL IN OPPOSITE DIRECTION
3 ELEVATOR................................. FULL FORWARD
4 AILERONS...NEUTRAL
5 FLAPS ....UP

When rotation stops
6 RUDDER..NEUTRAL
7 ELEVATOR............................... PULL CAREFULLY

Regain level flight, but do NOT exceed Vne

ROUGH ENGINE / POWER LOSS

1 AIRSPEED ....75 KIAS
2 FUEL PUMP ....ON
3 FUEL SELECTOR .... CHECK ON
4 ENGINE INSTRUMENTS .... CHECK
5 THROTTLE & PROPELLER .... CHECK
6 MIXTURE ....SET FOR SMOOTH RUNNING
7 ALTERNATE AIR .... OPEN

If no success or insufficient power

10 EMERGENCY LANDING .... PERFORM

Perform EMERGENCY LANDING Checklist as appropriate.

RPM OVERSPEED

1 FRICTION .... ADJUST
2 OIL PRESSURE .... CHECK

If Oil Pressure is low, adjust RPM with Throttle.

Perform OIL PRES LO Checklist

If Oil Pressure is normal, adjust RPM with Propeller control or with Throttle.

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RPM UNDERSPEED

1 FUEL PUMP...ON
2 FUEL SELECTOR... CHECK
3 FRICTION...ADJUST
4 PROPELLER ....HIGH RPM

If no success, adjust RPM with Throttle

Land ASAP

POWERED ENGINE RESTART

Warning: Only perform this checklist if the propeller is NOT windmilling and NO damage to the engine.

1 AIRSPEED.. 80 KIAS
2 ELECTRICAL LOAD...................................REDUCE
3 AVIONICS MASTER SWITCH............................. OFF
4 MASTER SWITCH .... ON
5 MIXTURE.. SET
6 FUEL SELECTOR............................. FULLEST TANK
7 FUEL PUMP..ON
8 ALTERNATE AIR ....OPEN
9 IGNITION ....START

Note:

By increasing the airspeed above approximately 130 KIAS, the propeller will begin to rotate and the engine can thus be started. For this the ignition switch should be set to both. Refer to WINDMILLING ENGINE RESTART Checklist. An altitude loss of at least 1000’ (300m) must be allowed for.

TOTAL ELECTRICAL FAILURE

1 CIRCUIT BREAKERS ....CHECK & RESET
Note: reset CB only once

2 ESSENTIAL BUS ....ON

If PFD information is lost.

3 HORIZON EMER SWITCH..................................ON
4 FLOOD LIGHT .... AS REQUIRED
5 FLAPS.......................................CHECK POSITION

Fly the airplane using Attitude & Power lever / Engine noise settings.

Land ASAP

ENGINE FIRE

IN FLIGHT:
Emergency landing is imminent!

1 CABIN HEAT .... OFF
2 FUEL SELECTOR .... OFF
3 THROTTLE...FULL
4 FUEL PUMP .... OFF
5 EMER WINDOW / CANOPYOPEN IF NECESSARY
To control smoke in cockpit.

Perform the EMERGENCY LANDING Checklist as appropriate.

ENGINE FIRE

ON GROUND:
1 AIRCRAFT ....STOP
2 FUEL SELECTOR ....OFF
3 CABIN HEAT ....OFF

When aircraft is Stopped

4 THROTTLE .... FULL
5 MASTER SWITCH (BAT)..OFF
6 IGNITION ....OFF
7 CANOPY & REAR DOOR.............................. OPEN
Evacuate airplane

ELECTRIC FIRE / SMOKE

IN FLIGHT:
1 HORIZON EMER SWITCH .... ON
2 EMER WINDOW / CANOPY......OPEN AS NECESSARY
To control smoke in cockpit.

3 ALT + BAT MASTER SWITCHES .... OFF
4 CABIN HEAT... OFF

If Electronics / Avionics are required

5 (BAT) MASTER SWITCH .... ON
6 ESSENTIAL BUS.. ON

If smoke decreases
Land ASAP

If smoke persists

7 (ALT) MASTER SWITCH .... ON
8 ESSENTIAL BUS.. OFF
9 BATT and ESS TIE CB's..................................PULL
Land ASAP

TOC PPT MAN NORM EMER PAT LIM W&B PERF

ELECTRICAL FIRE / SMOKE

ON GROUND:

1 BAT MASTER SWITCH .... OFF
2 THROTTLE...IDLE
3 MIXTURE ....IDLE CUT OFF

When engine and aircraft stopped.

4 CANOPY .... OPEN

Evacuate aircraft

SUSPICION CARBON MONOXIDE

1 CABIN HEAT .... OFF
2 VENTILATION .... OPEN
3 EMERGENCY WINDOW .... OPEN
4 CANOPY ....UNLATCH

UNINTENTIONAL FLIGHT IN ICING

1 PITOT HEAT ....ON
2 CABIN HEAT ....ON
3 DEFROSTER ....ON
4 PROPELLER .... INCREASE RPM
5 ALTERNATE AIR .... OPEN
6 EMERGENCY WINDOW .... OPEN AS REQUIRED

Leave Icing area

If Pitot Heat fails

7 ALTERNATE STATIC AIR .... OPEN
8 EMERGENCY WINDOW ....CLOSE

TOC PPT MAN NORM EMER PAT LIM W&B PERF

LANDING WITH DEFECTIVE BRAKES

Plan to land on the LONGEST runway available, make a normal landing.

After landing (if required)

1 FUEL SELECTOR... OFF
2 MIXTURE..................................... IDLE CUT OFF
3 IGNITION .... OFF
4 MASTER SWITCH .... OFF

Avoid obstacles with rudder steering.

Stop on the runway, do NOT attempt to taxi.

LANDING WITH DEFECTIVE MAIN TIRE

Plan to land on the WIDEST runway available, make a normal landing.

Advise ATC.

Make a normal landing except:

- Land on the Rwy side of the good tire
- Keep wing on good side low
- Use rudder and brakes to maintain directional control.

PITOT FAIL

1 PITOT HEAT .... CHECK ON

If in icing conditions.

Expect Pitot-Static system failure, erratic instrument indications.

2 ALTERNATE STATIC AIR .... OPEN
3 ICING AREA .... LEAVE

VOLTS LOW

ON GROUND:
1 RPM .... INCREASE TO 1200 RPM
2 ELECTRICAL LOAD .... REDUCE
3 AMMETER & VOLTMETER........................... CHECK

If light still on, terminate flight.

IN FLIGHT:
1 ELECTRICAL LOAD .... REDUCE
2 AMMETER & VOLTMETER........................... CHECK

If light still on
Perform ALTERNATOR FAIL Checklist

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OIL PRESSURE HIGH

1 OIL TEMP .... CHECK

If Oil temp is normal
Land at nearest suitable airport

If Oil temp is not normal
Land ASAP

OIL TEMPERATURE HIGH

1 CHT & EGT .... CHECK

If CHT & EGT are normal.
LANSA

If EGT or CHT high.

2 OIL PRESSURE... CHECK

If Oil Press is low.
>> Go to OIL PRES LO Emergency checklist item 5
Land ASAP

If Oil Press is normal

3 MIXTURE.. ENRICH
4 POWER ....REDUCE

If no success

Land ASAP

CYLINDER HEAD TEMP (CHT) or EGT HIGH

1 MIXTURE..ENRICH
2 OIL TEMPERATURE.......................................CHECK

If Oil Temp is high.

>>Go to OIL TEMPERATURE HIGH Checklist item 2

CYLINDER HEAD TEMP (CHT) or EGT LOW

A very low reading for a single cylinder may be the re-sult of a loose sensor.

Continue normal operations.

FUEL FLOW HIGH

1 FUEL PRES LO WARNING.................................CHECK

If on, suspect Fuel leak.
Land ASAP

If NOT on, continue normal operations.
Use fuel flow figures from AFM.

2 FUEL QTY....................................CHECK REGULARLY

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OVER VOLTAGE

1 ESSENTIAL BUS...ON
2 ALT MASTER SWITCH...OFF
3 BAT MASTER SWITCH ....ON
4 ELECTRICAL LOAD..REDUCE

Land at nearest suitable airfield

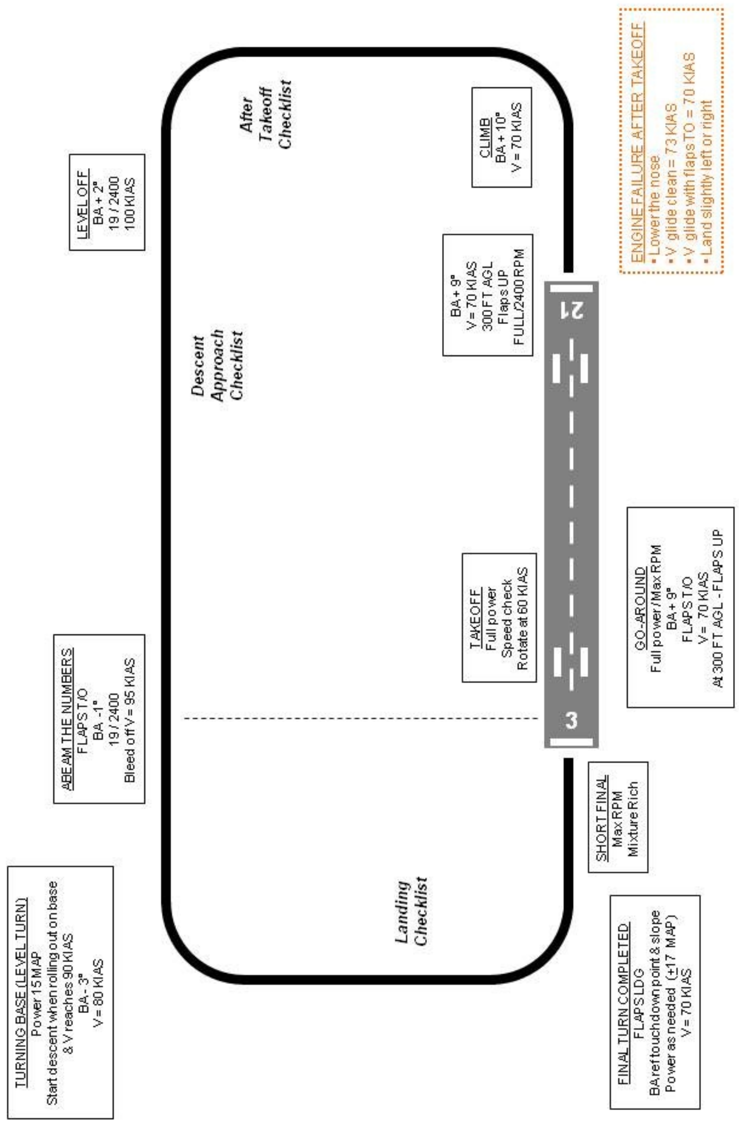
MANIFOLD PRESSURE HIGH

If clearly above green range, suspect faulty reading.

PATTERNS

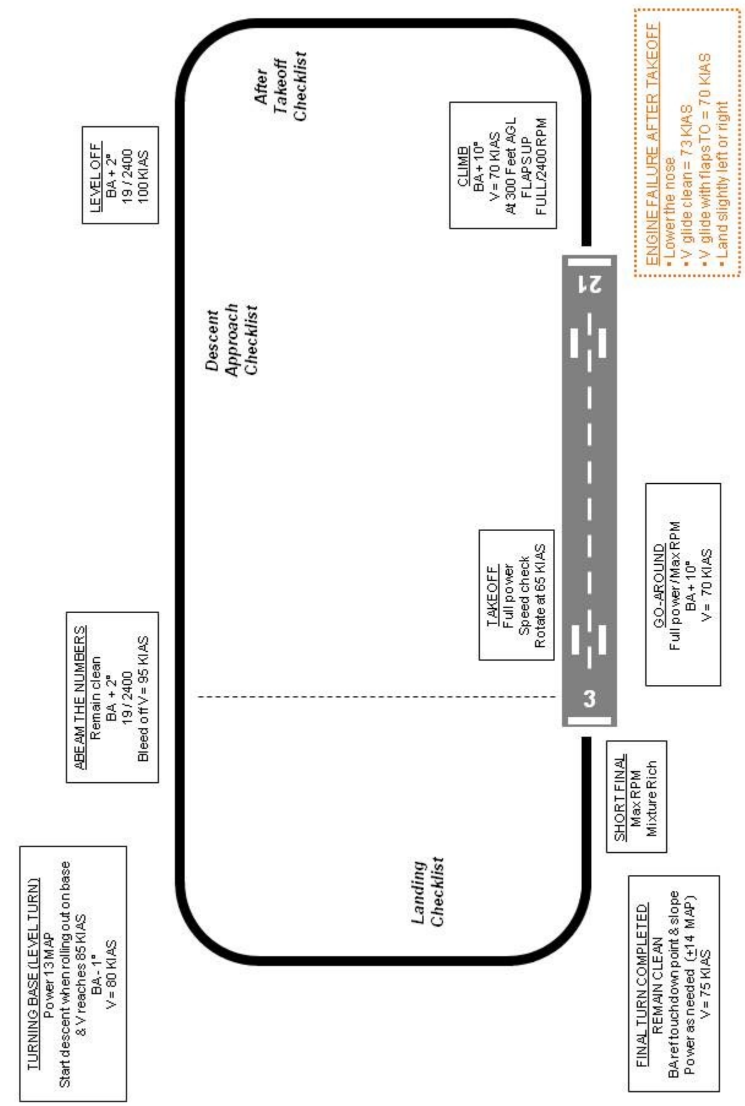
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NORMAL



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FLAPLESS



POWER OFF

AT OR ABOVE 2000 FT AGL WITHIN GLIDING RANGE
Simulated engine failure
BA for 75 KIAS – Trim – Proceed to HIGH KEY

PRIMARY ACTIONS

THROTTLE FULL
ALTERNATE AIR OPEN
MIXTURE FULL RICH
FUEL PUMP ON
IGNITION BOTH
FUEL SELECTOR ON

IF POWER IS NOT RESTORED:

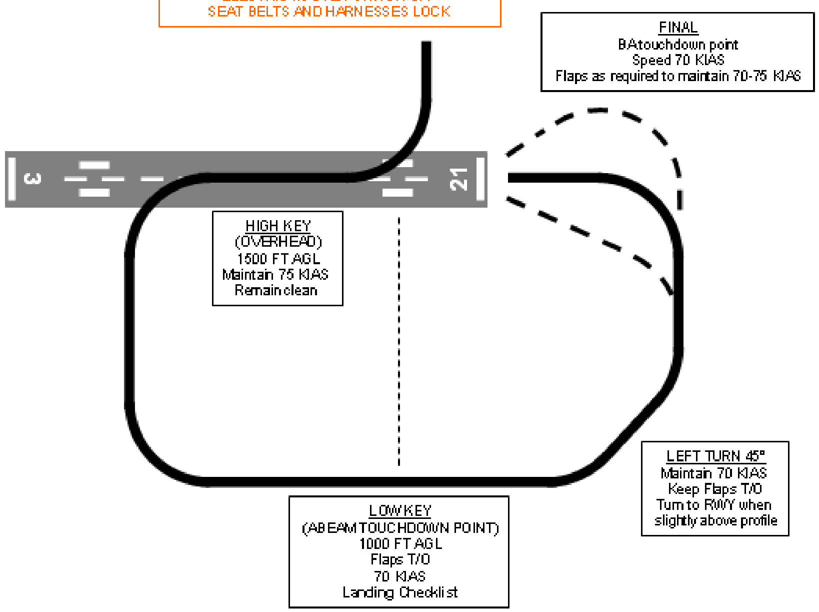
COMMUNICATION

TRANSPONDER 7700
MAYDAY CALL ATC / CTAF / 121.5

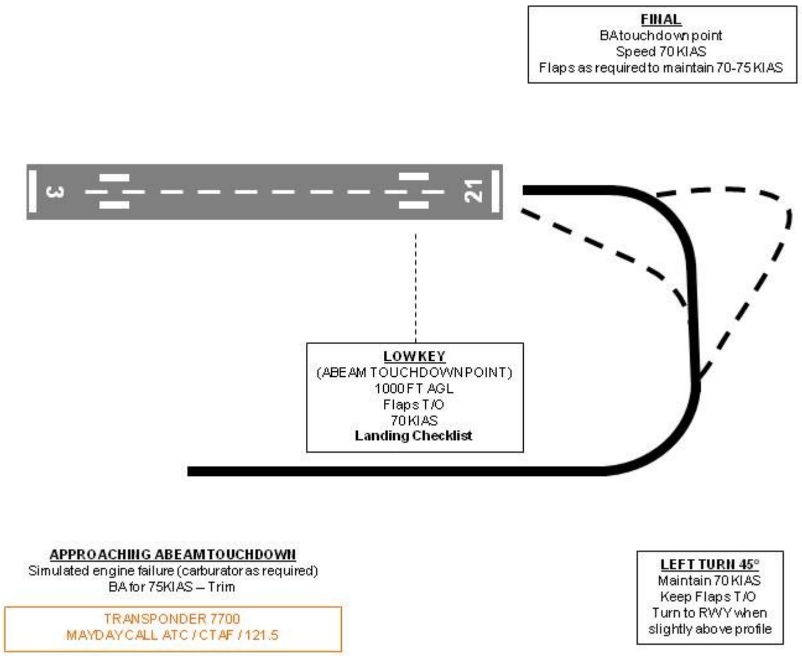
TIME PERMITTING, SECURE THE AIRCRAFT:

SECURE AIRCRAFT

FUEL SELECTOR OFF
MIXTURE IDLE CUT-OFF
IGNITION OFF
FLAPS AS REQUIRED
WHEN FLAPS NOT REQUIRED ANYMORE
ELECTRIC MASTER SWITCH OFF
SEAT BELTS AND HARNESSES LOCK



POWER OFF FROM DOWNWIND



APPROACHING ABEAM TOUCHDOWN
Simulated engine failure (carburator as required)
BA for 75KIAS – Trim

TRANSPONDER 7700
MAYDAY CALL ATC / CTAF / 121.5

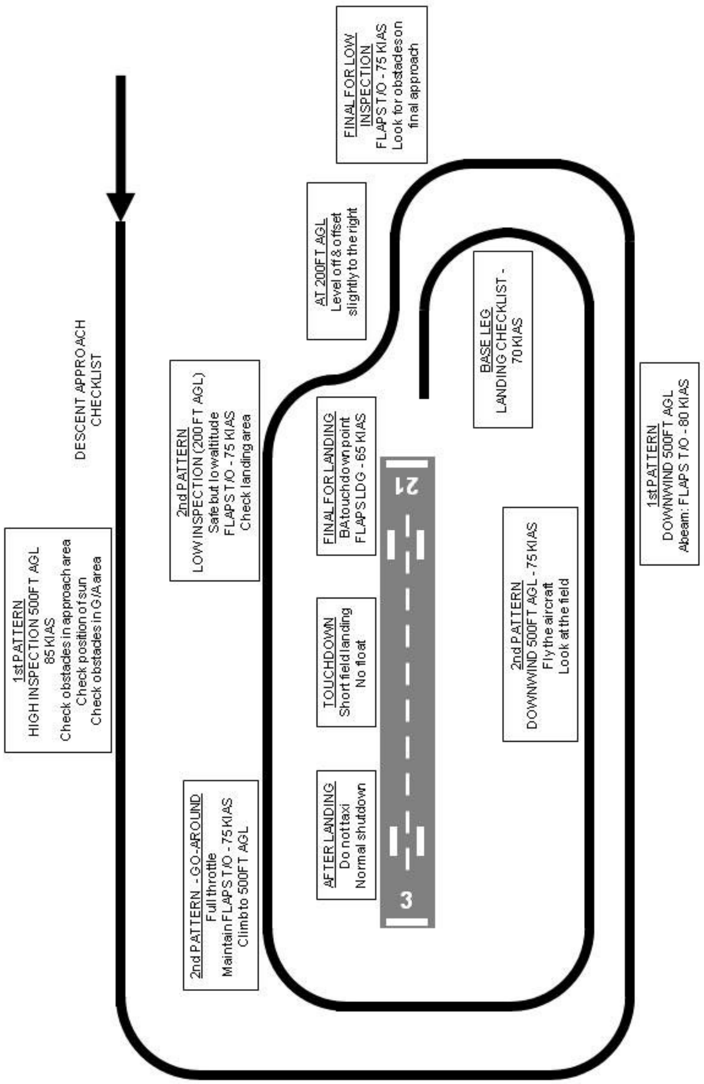
TIME PERMITTING, SECURE THE AIRCRAFT:

FUEL SHUTOFF VALVE CLOSED
MIXTURE IDLE CUT-OFF
IGNITION OFF
FLAPS AS REQUIRED
WHEN FLAPS NOT REQUIRED ANYMORE:
GEN/BAT SWITCH OFF
SEAT BELTS AND HARNESSES LOCK

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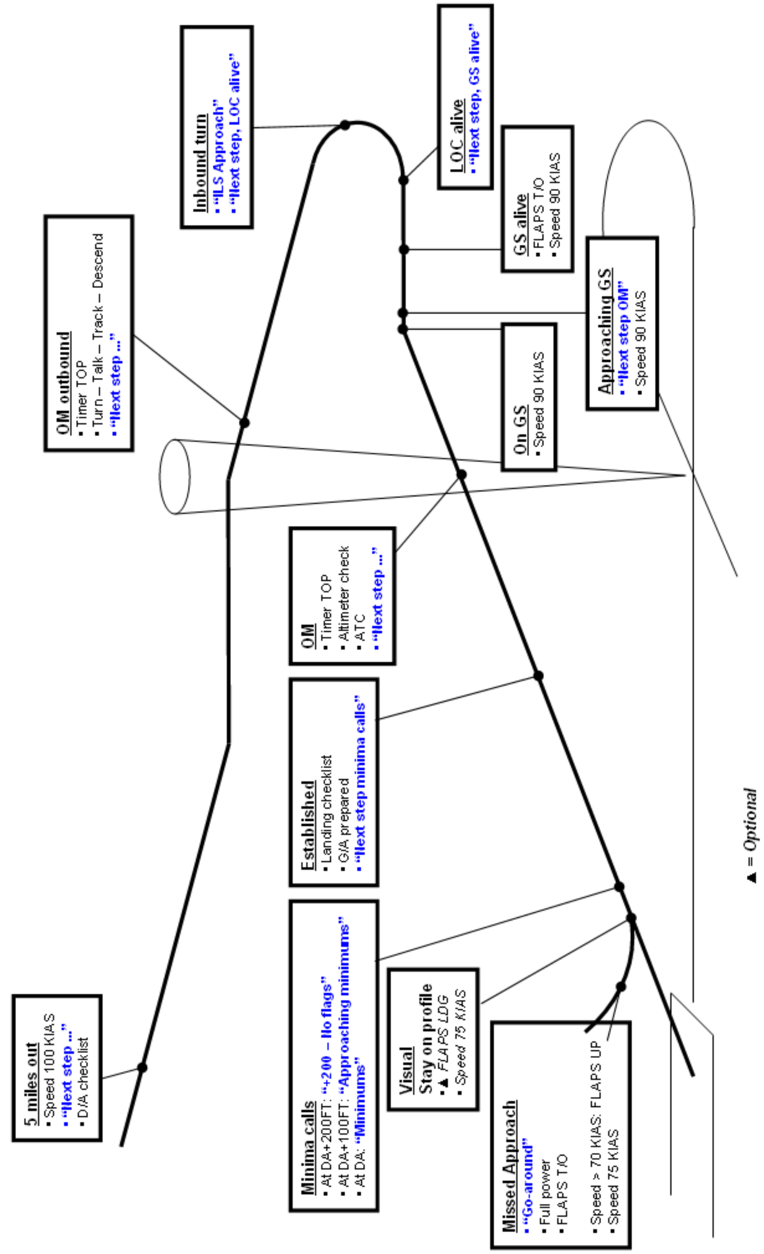
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PRECAUTIONARY

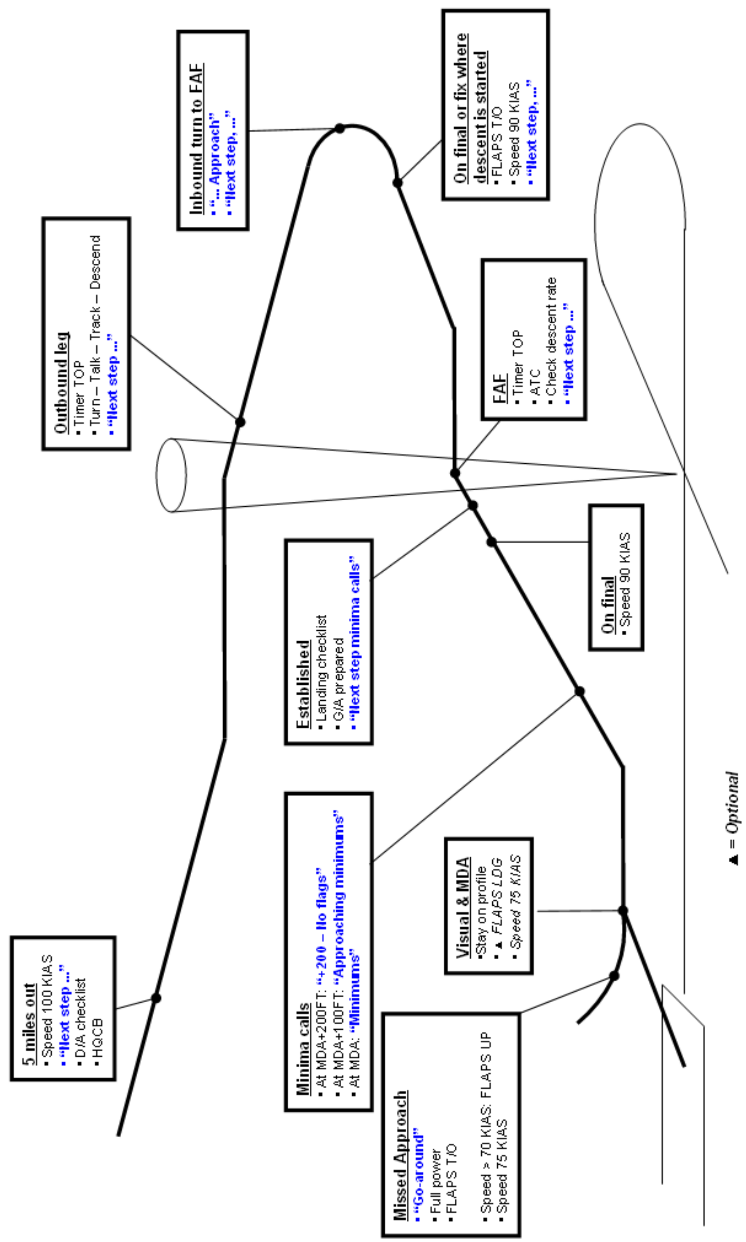


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PREC APP



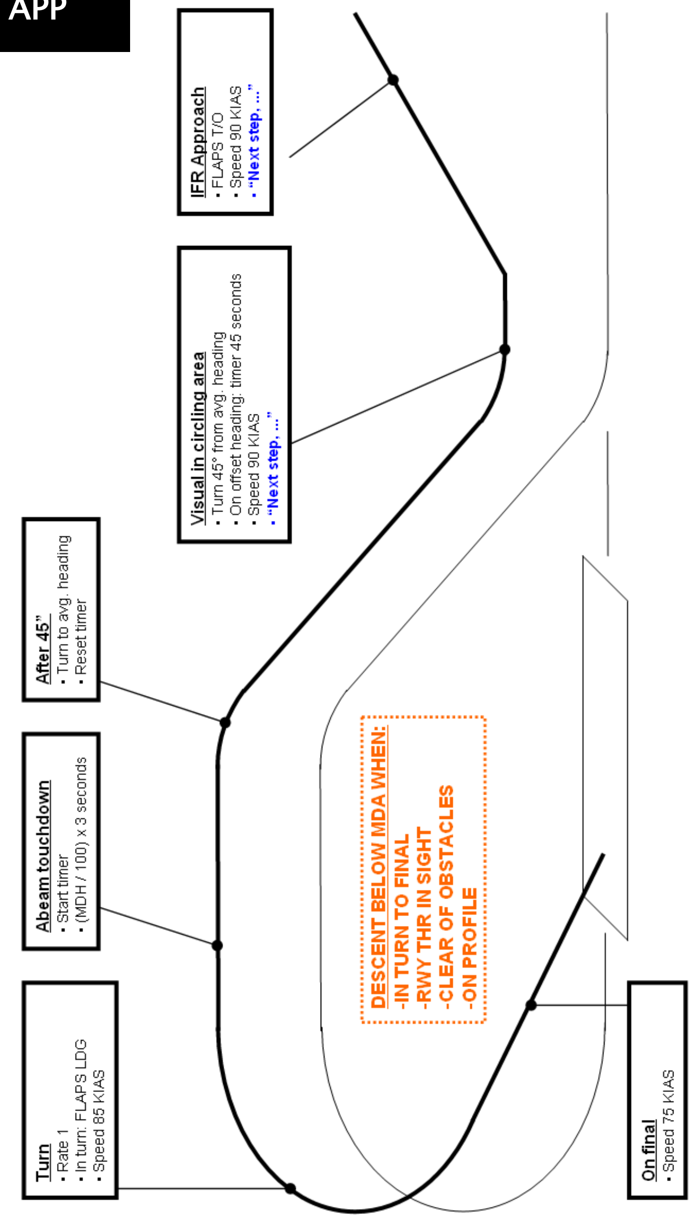
NON PREC APP



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TOC PPT MAN NORM EMER PAT LIM W&B PERF

CIRCLING APP



LIMITATIONS

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AIRSPEED LIMITATIONS

Speed Definition	Limitation	Indicator Marking
Never Exceed Speed (Vne)	178 KIAS	Red radial line
Maximum Structural Cruising Speed (Vno)	129 KIAS	End of green arc
Design Maneuvering		
Above 2.161 lbs up to 2.535 lbs	108 KIAS	
Below 2.161 lbs	94 KIAS	
Maximum Flaps Extended Speed		
Takeoff (T/O)	108 KIAS	
Landing (LDG)	91 KIAS	

TOC PPT MAN NORM EMER PAT LIM W&B PERF

POWERPLANT LIMITATIONS

Definition	Limitation	Indicator Marking
Rotational Speed		
Max Takeoff	2700 RPM	Red line
Max Continuous	2400 RPM	
CHT	MAX 500°F	
Oil Temperature	MAX 245°F	Red line
Oil Quantity	MIN 4 QTS MAX 8 QTS	
Oil Pressure	MIN 25 PSI MAX 98 PSI	Red line
Fuel Grade	100 LL	
Fuel Pressure	MIN 14 PSI MAX 35 PSI	Red line

WEIGHT LIMITATIONS

Max Takeoff Weight	
Normal Category	2.535 lbs
Utility Category	2.161 lbs
Max Landing Weight	2.535 lbs

WEIGHT LIMITATIONS	
Max Weights in Baggage Compartments	
Standard Baggage Compartment	66 lbs
Tube	11 lbs

MANEUVER LIMITS

NORMAL CATEGORY

All intentional acrobatic maneuvers (including spinning) and normal flight maneuvers with more than 60° bank are prohibited.

UTILITY CATEGORY

All intentional acrobatic maneuvers (including spinning) and normal flight maneuvers with more than 90° bank are prohibited.

FLIGHT MANEUVERING LOAD FACTORS

	At V_A	At V_{NE}	With FLAPS
NORMAL CATEGORY	+3.8 / −1.52	+3.8 / 0	+2.0
NORMAL CATEGORY	+4.4 / −1.76	+4.4 / −1	+2.0

FUEL LIMITATIONS	
Total Fuel Capacity	2 x 20.6 = 41.2 USG
Unusable Fuel	2 x 0.5 = 1 USG
Usable Fuel	40.2 USG
Max Indicated Fuel Tank Quantity (per tank)	15 USG
Max Permissible Unbalance (between L and R Tank)	10 USG

COMPANY LIMITATIONS

SABENA AIRLINE TRAINING CENTER—WEATHER MINIMA		
Type of Flight	**Minimum Ceiling & Visibility**	**Wind Limitations**
DUAL VFR — Local	1000' ceiling, 3 miles visibility.	Maximum 30 knots, crosswind component - 17 knots.
DUAL VFR — Cross Country	1000' ceiling, 3 miles visibility.	Maximum 30 knots, crosswind component - 17 knots.
SOLO VFR — Local	3000' ceiling, 5 miles visibility.	Maximum 20 knots, crosswind component - 10 knots
SOLO VFR — Cross Country	4000' ceiling, 5 miles visibility.	Maximum 20 knots, crosswind component - 10 knots
DUAL IFR—Local	600' ceiling, 2 miles visibility or Jeppesen minimums if higher.	Maximum 30 knots, crosswind component - 17 knots.
DUAL IFR—Cross Country	600' ceiling, 2 miles visibility or Jeppesen minimums if higher.	Maximum 30 knots, crosswind component - 17 knots.

TEMPERATURE LIMITATIONS

- Flight operations will be discontinued once temperature reaches 43˚C.
- If a flight is arriving back to home base and ATIS reports 43˚C only a full stop landing will be made.
- No touch and go operations with temperatures above 43˚C.

AIRCRAFT LEANING PROCEDURES

- At density altitudes of 5000ft or above the aircraft should be leaned for takeoff with the following procedure after the run-up is completed.

-Full power
-Lean mixture slowly till EGT reaches 1350˚-1400˚
-Reduce power to 1000 RPM

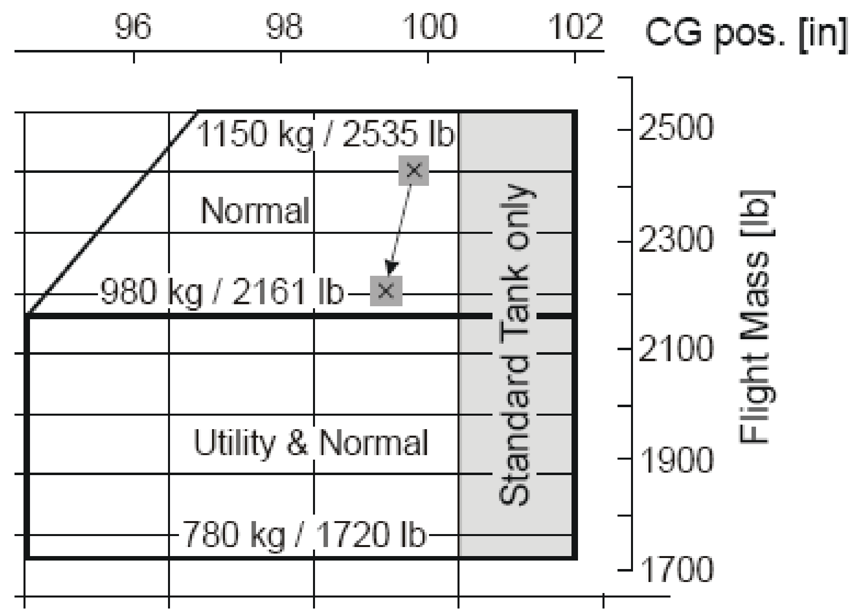
WEIGHT & BALANCE

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ITEM	ARM (IN)	WEIGHT (LBS)	MOMENT (IN-LBS)
BEW			
PILOT & FRONT PASSENGER	90.6		
AFT PASSENGERS	128.0		
BAG COMP (MAX 66 LBS)	143.7		
BAG TUBE (MAX 11 LBS)	170.1		
ZFW			
FUEL IN TKS (40 USG MAX)	103.5		
RW			
FUEL ALLOWANCE (START-TAXI)	103.5	-6	-621
TOW (MAX 2535 LBS)			
TRIP FUEL	103.5		
LW (MAX 2535 LBS)			

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TOC PPT MAN NORM EMER PAT LIM W&B PERF



AIRCRAFT	WEIGHT (LBS)	MOMENT (IN-LBS)
N4106G	1722.0	166506.77
N4139B	1718.0	165990.08
N4189U	1719.0	165960.43
N4191M	1722.0	165840.79

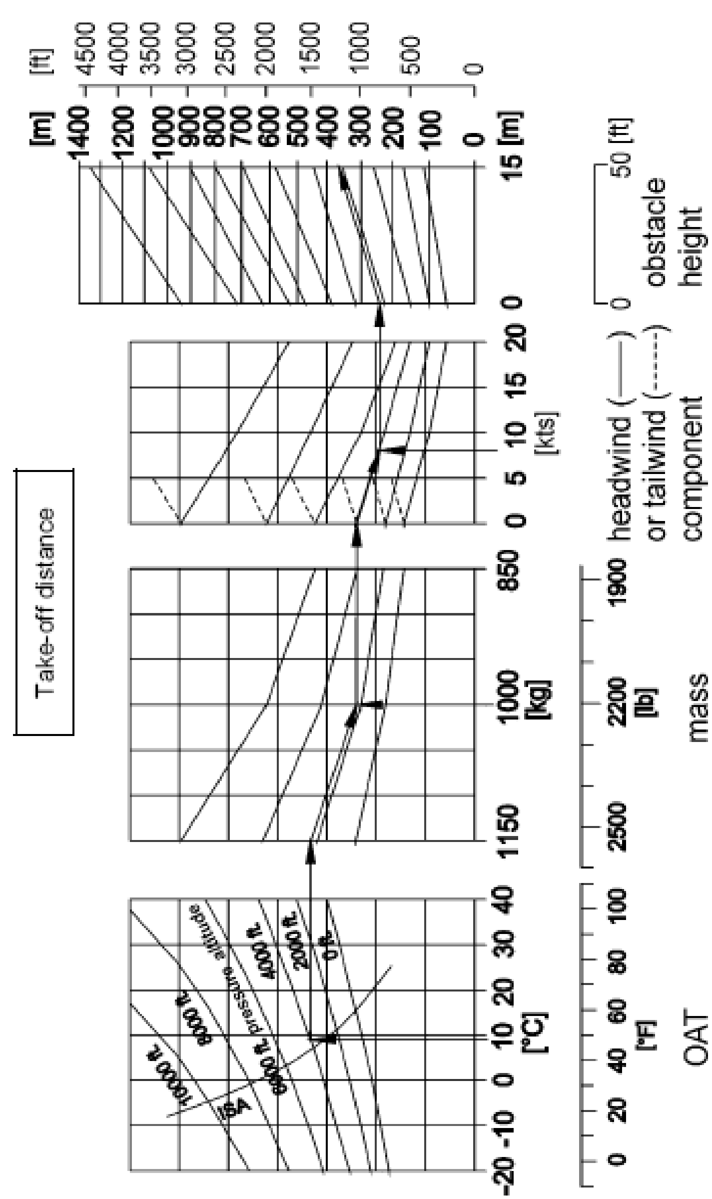
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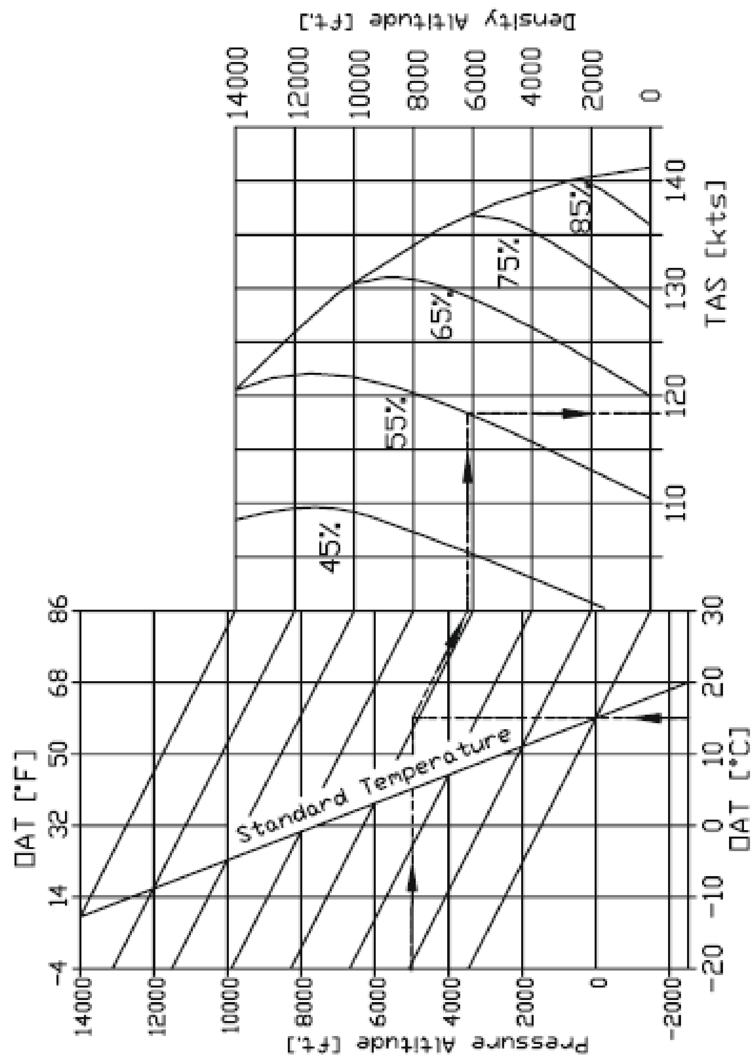
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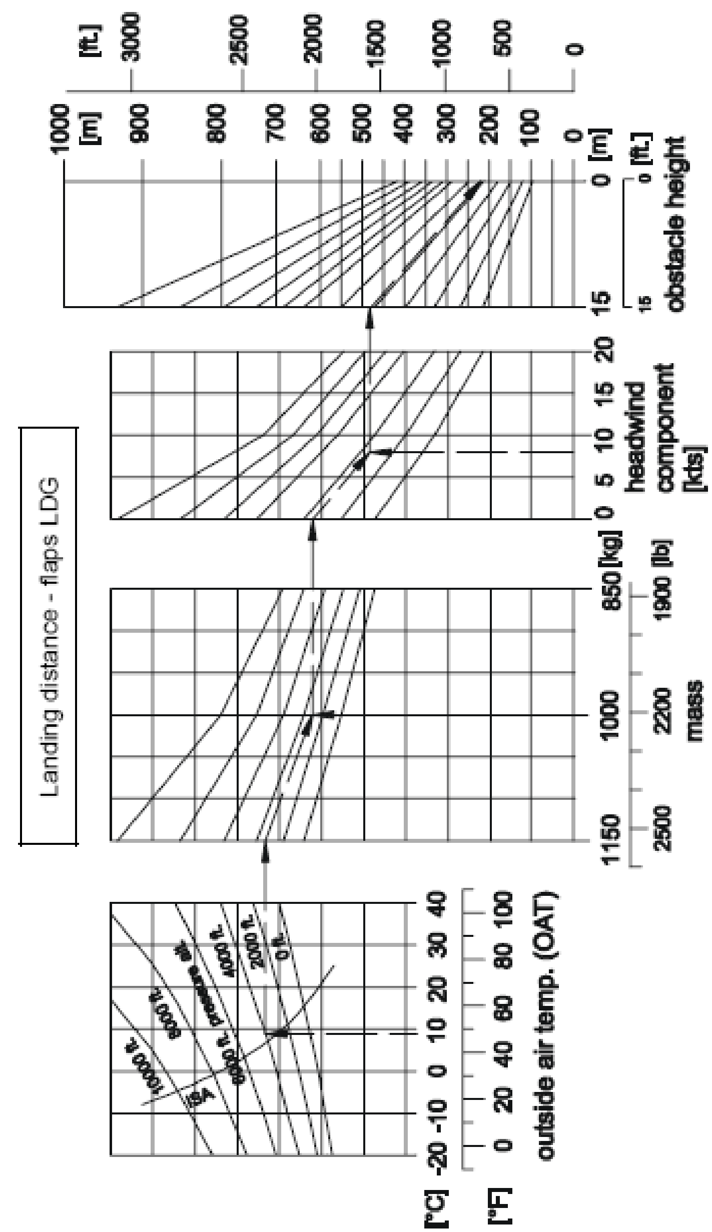
TAKEOFF DISTANCE



CRUISING TAS



LANDING DISTANCE



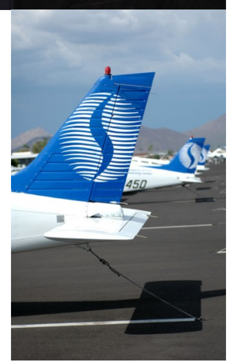
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